ABSTRACT

Title of dissertation: BREASTFEEDING WITHOUT NURSING: THE LIVED EXPERIENCES OF EXCLUSIVE PUMPERS

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Worldwide, the overwhelming majority of parents initiate chest/breastfeeding at birth. Human milk is regarded as optimal nutrition for infants and the perfect version of milk for the first years of life; lactation also prevents disease in chest/breastfeeders. Most birth parents want to chest/breastfeed and it is seen as central to motherhood. Chest/breastfeeding is often challenging, resulting in early cessation. Exclusive pumping—that is, only expressing/pumping milk rather than nursing directly at the breast/chest—provides an alternative for those who cannot or do not want to nurse, while retaining most chest/breastfeeding benefits. Existing literature on EPing predominantly focuses on neonatal intensive care unit settings, milk composition, and quantitative data, such as secondary analyses of nationwide surveys. Despite the growing numbers of exclusive pumpers, there is little-to-no data concerning the lived experiences of exclusive pumpers, particularly pertaining to support needs and information provision.

Through a retrospective, cross-sectional survey of over 2,000 exclusive pumpers and longitudinal follow-up with over 300 participants, the *Breastfeeding Without Nursing* study collected qualitative and quantitative data to explore their lived experiences, including: why some chest/breastfeeding exclusively pump; how they feel about it; and what information and support they need and where they find it. Themes within four domains—the circumstances surrounding exclusive pumping, affective experiences, information, and support—were identified through inductive thematic analysis. The findings of this analysis, combined with descriptive and statistical analysis of quantitative data, demonstrate that exclusive pumpers, in general, wanted to nurse at the breast, but as a result of a variety of socioecological influences, were unable to. This led to feelings of loss, grief, and anger, but also determination and pride. Participants needed earlier and better information, many having been incognizant of exclusive pumping despite receiving chest/breastfeeding education. Online support groups were vital sources of information and support; lactation consultants were often not regarded supportive or providing useful information. Having identified gaps in exclusive pumping information, education, and support, I suggest best practices and future research. Contributions to information science include recognizing the importance of education in overcoming incognizance and using a socioecological perspective to analyze the influences on information experience.

BREASTFEEDING WITHOUT NURSING:
THE LIVED EXPERIENCES OF EXCLUSIVE PUMPERS

by

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Dissertation submitted to the College of Information Studies of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2020

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Foreword

1.1. My Perspective

Researching exclusive pumping (EPing) (breastfeeding through only pumping and bottlefeeding milk) came to me completely by surprise, given both the circumstances surrounding it and the circuitous route my life had taken up to that point. I do not think anyone—myself included—thought that undergraduate and master's degrees in law from the Universities of Cambridge and San Francisco together with a Master of Library Science (interspersed with immigrating to the United States, practicing law, opening and running a café, and moving from the west to the east coast) would lead me to study EPing.

Given this unorthodox background, it is not surprising that my research is a result of my own experience. I had a beautiful baby girl, Georgie, in April 2016 and unfortunately, due to a variety of obstacles and little-to-no professional support, my baby and I were not able to establish a direct nursing relationship. I was devastated that we would never have the supposed "gold standard" of baby nutrition, bonding, and comfort, but was still determined to give her my milk any way I could. I knew vaguely how to express milk with a breast pump, but had little clue how to do it as the sole means of extraction, despite having taken a breastfeeding class, spoken at length about breastfeeding with our birth doula, and conducted a great deal of research on the topic. After doing more online research, I stumbled across the term "exclusive pumping" at about 2 weeks postpartum. Through social media, specifically Facebook groups, I learned how to sustain EPing, received answers to specific questions, and felt understanding and support for my situation.

After an initial search for existing studies on EPing or exclusive pumpers (EPers), I discovered that research about EPing in general is scant; research about the experiences of EPers specifically is even more sparse. Combining public health and information science perspectives has provided me with enough latitude to not only ask EPers about their information experiences, but also about their overall EPing "journey."

I have been overwhelmed by the response to my research. Quickly amassing over 2,000 responses to the initial survey is an indication of how passionately EPers want their voices heard: the initial survey is long and has a fair amount of open-ended questions, yet people took their time (approximately 35 minutes on average, but often over an hour) to share their experiences at length. Consequently, I have amassed a huge amount of qualitative data to analyze. However, it has been the support I have received that has truly touched me and made me realize both the critical need for EPing research and that my research has already made a difference. Some *Breastfeeding Without Nursing* study participants shared with me that they experienced profound catharsis as they finally got to share their breastfeeding/EPing/postpartum journey; others have expressed joy and gratitude that someone is finally taking EPing seriously, getting the word out there, and/or trying to create a world where those who come after them will not face as many challenges or negative reactions as they did.

While the process of PhD research is somewhat disengaged from the real world, the most important impact of my research will be anything that can make experiences of EPing more positive. Before ever embarking on formal research, I anecdotally discovered that a frightening number (read: vast majority) of EPers get no or bad advice from lactation consultants (LCs) (anyone who provides breastfeeding or lactation support in an

official capacity). This advice does not usually come out of ill intention, but simple ignorance: giving an EPer the same advice about pumping as a nursing parent is usually going to result in failure for the EPer. As EPing grows in popularity and as breast pumps sit on every new parent's side table and continue to offer more technologically advanced features, it is the responsibility of LCs to provide correct information and appropriate support. One of the primary goals of my research is to discover and disseminate this correct information and provide a model of support that LCs can employ with EPers.

Finally, I want to make sure that readers are not left with the wrong impression of what I am trying to achieve with my work. Just as no LC should force someone to nurse (or breastfeed in general), I do not believe that EPing should replace nursing for those who want to feed directly at the breast and are successful. In fact, part of the reason I obtained my Advanced Lactation Consultant qualification is to help as many people be successful at nursing as possible. While there are some EPers who have or could have chosen to nurse successfully but felt that EPing was the right choice for them, most EPers tried to nurse but, for a variety of reasons, were unable to. My gut feeling is that at least half of these EPers could have successfully latched their infants and had the breastfeeding journey they desired if they had received better practical, informational, and emotional support. Instead, they resorted to the frustrating, challenging, but devoted path of EPing so they could still feed their child their milk. It is for all EPers that I do this research, but especially those who, like myself, had other breastfeeding intentions and goals but experienced the profound loss and grief of never being able to fulfill them.

1.2. Use of Terms and Language

It is vitally important to use inclusive and gender-neutral language, especially in the arena of parenting and infant feeding. An increasing number of parents do not identify within the gender binary of male/female, yet carry, birth, and feed children. These caregivers may breastfeed, chestfeed, and/or express milk; they may call themselves mothers, fathers, parents, or something else entirely. In addition, there are those who lactate to feed children other than their own legal or genetic child: grief donors express milk to donate to others (individuals or milk banks) after the loss of a child; those acting as a gestational surrogate may express milk to feed the child or to donate; others induce lactation to feed an adopted or fostered child, another's child in an emergency, or a child carried and delivered by another family member. Therefore, unless a different term was used in specific literature or by a study participant, or it is necessary to specify a legal and/or genetic bond, use of *parent* is avoided and is replaced with terms such as *lactating person*, *breastfeeder*, *gestational carrier*, *caregiver*, *participant*, or simply, *person*. *They* is used as a singular pronoun (instead of he and/or she), unless citing literature or specifically referring to someone whose pronouns are known to me.

Consistent with the convention in scientific journals focusing on breastfeeding and lactation, breast milk is referred to as *human milk*, as it more properly indicates the species of the source, rather than the body part from which it comes (cf. *cow milk* vs. *udder milk*). While *human* can easily replace *breast* in *breast milk*, it is harder to find a universal and gender-neutral term for the interpersonal process of human milk feeding; that is, the actions and interactions between the person doing the feeding and the child being fed, as opposed to the scientific description merely concerning the source of

nutrition. While I recognize that *breastfeeding/chestfeeding* is more inclusive than simply *breastfeeding*, I have chosen to use *breastfeeding* alone for the sake of brevity and given its ubiquitous use, both in existing literature and by the participants in my research (for more discussion of these topics, see: Dinour, 2019; Jardine, 2019; MacDonald et al., 2016; Spatz, 2020). *Breastfeeding* is used to mean feeding human milk, regardless of the modality. *Exclusive breastfeeding* applies to those feeding or being fed 100% human milk. Where possible, I will distinguish cases/literature concerning donor human milk; however, many caregivers—and even HCPs and researchers—refer to children fed with donor milk as breastfed. To retain breastfeeding/human milk feeding exclusivity, the only other substances that can be ingested are prescribed medications. *Exclusive formula feeding* applies to those feeding or being fed only formula.

Direct nursing or just *nursing* is used to denote feeding directly at the breast/chest; *latch* refers to the physical connection between a child's mouth and a breastfeeder's nipple. *Expression* means removal of milk from the breast/chest by all means except nursing; however, given that most breastfeeders today use a pump to remove their milk, *pumping* is more commonly used. A breastfeeder who expresses all of their milk is an *exclusive pumper* (EPer), whether they hand express or use a pump. Whether this milk constitutes 1% or 100% of a child's diet does not impact the *exclusive* part of *exclusive pumping* (EPing). *Grief pumpers* express human milk to donate after the loss of their child (either prenatally or postpartum). The term *weaned* is usually used to denote the cessation of nursing by a child being exclusively nursed; EPers instead talk of *weaning from the pump*. For most EPers, this means ceasing to lactate, but some may wean off the pump because they have latched their child.

Generally, *child* or *children* is used so as not to perpetuate the myth that breastfeeding should cease when babyhood does; furthermore, references to *child* in the singular is not at the exclusion of multiple *children* where appropriate. However, *infant* is used when specifically referring to a child under the age of 12 months; *newborn* refers to an infant in their first month of life. EPers sometimes refer to children fed pumped milk as *pumplings*.

Doulas are those trained to assist the laboring parent and their family during childbirth (*birth doula*) or support the family postpartum (*postpartum doula*). The term *lactation consultant* (LC) any person with professional training who provides information, support, advice, and education about breastfeeding, lactation, or expression. LCs predominantly refer to *International Board Certified Lactation Consultants* (IBCLCs), *Certified Lactation Counsellors* (CLCs), and *Certified Lactation Educators* (CLE). Peer supporters include birth and postpartum doulas (who do not have an IBCLC or CLC qualification), peer counsellors with groups such as La Leche League or the *Special Supplemental Nutrition Program for Women, Infants, and Children* (WIC). Medical professionals, such as obstetrician-gynecologists, pediatricians, nurses, and midwives, are referred to as *healthcare professionals* (HCPs). A list of abbreviations is on page xxii.

Dedication

This work is dedicated to all those who have the discipline, determination, and dedication to exclusively pump their milk to give babies, be they their own or others', the best possible start in life.

Acknowledgements

Pumpingly, I would, of course, first like to thank the almost 2,500 exclusive pumpers who responded to my survey. I would especially like to thank the 2,005 of them who answered enough questions to be included in my data analysis. Extra special thanks must go to those who had the dedication to answer the follow-up surveys—a few for 18 months! I would also like to thank admins of various online exclusive pumping groups that allowed me to post invitations to participate in their groups. My survey pilot testers, Holly Chapman, Katrina Dizon Mariategue, Amanda Glenn, and Caroline Niziol, gave me great feedback and improved the initial survey in ways I would never have thought of: thank you. I can't thank those in my "home" Facebook groups—*Exclusive Pumping: Breastfeeding Without Nursing* (of which I am now an admin) and *BWN: Off Topic*—enough for their enthusiasm, support, and advice that they continue to give. I hope that they never get sick of my advice and my nerdy evidence-based posts (which have gotten rather sparse of late, thanks to writing this dissertation!).

Academically, my diligent, thorough, and forever-affable advisor, Dr. Beth St. Jean, has gone above and beyond to support me throughout this research and writing process. I am grateful beyond measure. I am indebted to Dr. Edmond Shenassa for his patience and dedication in coming to my aid for many a statistical analysis, as well as helping me to think more like a public health researcher. I am very thankful to Dr. Shannon Jette for agreeing to be the Dean's Representative on my committee and for her insightful and on-point suggestions about qualitative data analysis at my proposal defense. I am exceptionally appreciative of the support of Dr. Paul Jaeger, who agreed to continue to be on my committee despite a drastic change in research topic and was a

cheerleader of mine at the iSchool from the first time we met. I thank Dr. Jen Golbeck both for her expertise in social media which helped frame my findings on that topic and for sharing her Golden Ratio dogs with the world—I can't wait to be a part of the Golden Ratio Graduation Ceremony! As breastfeeding experts go, Dr. Karin Cadwell is at the top of the field, and I am as humbled as I am grateful for her willingness to share her knowledge, welcoming me into the Healthy Children Project community, and giving her time so generously to my research and (often obtuse) breastfeeding questions.

Researchingly(?), a few people have helped me with the drudgery of the data analysis process. Lauren Schirle was an immense help with thematic analysis and put in hours of work voluntarily, for which I must offer my deepest thanks. I am grateful for the assistance of Dr. Julie Baker, Emily Moore, and Shasvat Vyas with various mundane tasks. The Interlibrary Loan department at the University of Maryland deserves a medal for all the papers it provided me over the past few years. And, most recently, I am grateful to the four smart, insightful scholars with whom I am doing a review of exclusive pumping literature, especially Dr. Sarah Reyes and Jennifer Peregoy. I hope to work with both of you for many years to come and, both individually and together, become the next wave of unstoppable lactation researchers.

Personally, I thank "the mums," AKA Yvonne Jardine and Kirsti Rauvala, for their support over the many years that it took me to get here and for always supporting my own exclusive pumping journey. Thank you to my brother, Alastair Jardine, for being a sympathetic and encouraging confidante—I am (finally…) genuinely thrilled to have you for a sibling. My dad, Nicholas Jardine, passed away in 2000 when I was 14 years

old. He was the first PhD I knew; it is thanks to him that I always wanted to become Dr. Jardine.[1] I hope that he would be proud of my work if he were with us today.

Jaini Giannovario, who suddenly passed away in August 2019, was our best friend, Georgie's third mom, and an integral part of our lives. Her loss has been impossibly hard on us. As well as being one of my favorite people ever, she was an essential member of my support team and I must thank her for all that she did to enable me to conduct this research, go to conferences, feed me and my family, nurture Georgie…the list goes on. You will never be forgotten and you will forever be loved.

There is no way to thank my indescribably supportive and loving wife, Jo Arnone, enough. I know that she's super sick and tired of hearing about breastfeeding, but she still listens (or at least does a really good job of faking it) most of the time, but *always* when it matters. I could never have exclusively pumped for our own daughter without her help and encouragement and, probably more importantly, I would never have come to terms with weaning off the pump without her gentle and loving counsel. Her help with solving problems and being a sounding board for my (often half-baked) ideas has been indispensable. Thank you for always being on my side, holding up the home front during the many late nights and out-of-town trips, being an incredible mom, and an amazing partner. Not to mention the years' worth of gratitude that is due to you for the yeoman's duty you've put in, despite still having to work fulltime, over the last 5 weeks while we've all been socially isolating at home because of the coronavirus pandemic. Under

[1] Sorry, Mum—I know you're Dr. Jardine too, but we're leaving the medical doctor thing up to Dr. Georgie!

these circumstances, finishing this dissertation has been one of the most difficult challenges of my life—without you, it would have been impossible.

Lastly, without my daughter, Georgette Jardine, this research would never have come to be. She is hilarious, smart, stubborn, sweet, and a whole host of other amazing things and it will forever be an honor and privilege to be her mum. Thank you for being.

Fiona M. Jardine

April 18, 2020

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List of Abbreviations

AAP	American Academy of Pediatrics
BSE	Breastfeeding self-efficacy
BWN	Breastfeeding Without Nursing
C-section	Cesarean section
CDC	Centers for Disease Control and Prevention
CI	Confidence interval
CLC	Certified Lactation Counsellor
D-MER	Dysphoric milk ejection reflex
df	Degrees of freedom
EP	Exclusively pump
EPed	Exclusively pumped
EPer	Exclusive pumper
EPing	Exclusive pumping
F	F distribution
FDA	U.S. Food and Drug Administration
H	Kruskal-Wallis test statistic
HCP	Healthcare professional
IBCLC	International Board Certified Lactation Consultant
IFPS II	Infant Feeding Practices Survey II
LC	Lactation consultant
M	Mean
n	Sub-sample size
N	Sample size
NICU	Neonatal intensive care unit

POC	People of color
PPA	Postpartum anxiety
PPD	Postpartum depression
PTSD	Post-traumatic stress disorder
SD	Standard deviation
SIDS	Sudden infant death syndrome
U	Mann-Whitney test statistic
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children
z	Standardized score
χ^2	Chi-squared test statistic

Chapter 1. Introduction

Worldwide, the overwhelming majority of parents initiate breastfeeding at birth (Victora et al., 2016). Breastfeeding is seen as central to a mothering role (Hauck & Irurita, 2003) and "the most natural thing in the world" (I. Williamson et al., 2012, p. 434). Human milk is regarded by parents, health care providers, and public health organizations as optimal nutrition for infants and the perfect version of milk for the first years of life. Breastfed children have reduced infectious disease mortality, serious diarrhea, gastrointestinal infections, dental malocclusions, ear infections, and allergic rhinitis and breastfeeders have lower risk of cardiovascular disease, breast and ovarian cancer, and type 2 diabetes (Victora et al., 2016). On a societal scale, breastfeeding produces significant cost savings for health systems, especially in treating premature infants (Ball & Wright, 1999; Bartick et al., 2016; Renfrew et al., 2012), increased participation in the workforce due to less illness in both breastfed children and breastfeeders themselves (Bartick & Reinhold, 2010), and fewer environmental pollutants produced by the production and transportation of infant formula (Coutsoudis et al., 2009; Karlsson et al., 2019; Linnecar et al., 2014).

Breastfeeding is recommended for a duration of 6 months exclusively and 2 years and beyond non-exclusively (American Academy of Pediatrics [AAP] 2012; United Nations Children's Fund [UNICEF] 2018; World Health Organization [WHO] 2018). However, only 41% of the world's infants under 6 months of age were exclusively breastfed between 2013 and 2018 (UNICEF & WHO, 2019). Although 83% of infants born in the United States in 2015 received human milk at some point, only 25% were exclusively breastfed until 6 months of age (Centers for Disease Control and Prevention

[CDC], 2019).[2] Factors affecting breastfeeding initiation, exclusivity, duration, and cessation include physical aspects of breastfeeding (e.g., trouble sucking or latching), concern about milk supply, and a perception that human milk is not satisfying enough for an infant (Newby & Davies, 2016; Odom et al., 2013). Other reasons for early cessation include pain and physical discomfort, a desire for someone else to feed their child, being told or thinking their child is not gaining enough weight, and their child losing interest in nursing (Newby & Davies, 2016; Odom et al., 2013). Many of these reasons for early cessation are exacerbated by psychological or emotional issues, lack of preparation or unrealistic expectations, the influence of and support by partners or family members, the circumstances surrounding the child's birth, the impact of the media, formula marketing, the culture within a breastfeeder's society, and various inequities, such as low socioeconomic status (SES) and racism (Brown, 2016, 2017, 2019c; CDC, 2016; Hobbs et al., 2016; Victora et al., 2016).

When breastfeeding goals and expectations are not met, caregivers often mourn the loss of the nursing relationship they imagined themselves having and feel: guilt, failure, and shame (Dennis & McQueen, 2007; Mozingo et al., 2000; Thomson et al., 2015); sadness, grief, and trauma (Brown, 2019b; Labbok, 2008a); inadequacy and isolation (Hegney et al., 2008; Thomson et al., 2015); and anger and perceived judgment and condemnation (Brown et al., 2011; Lee, 2008; Thomson et al., 2015). Thus, setting aside debates over the objective benefits of breastfeeding, it is essential to optimize

[2] To compare (received some milk/exclusively breastfed until 6 months of age): Canadian infants born in 2010: 87%/26% (Government of Canada, 2012); British infants born in 2010: 81%/1% (McAndrew et al., 2012); and Australian infants born in 2010: 93%/29% (Australian Institute of Health and Welfare, 2011).

breastfeeding support—practical, informational, and emotional—so that those who want to breastfeed have the best possible chance to fulfil their goals.

Although nursing at the breast is considered the premier form of breastfeeding (AAP, 2012; WHO, 2003), exclusive pumping (EPing) provides an alternative for those who cannot or do not want to nurse, while retaining most breastfeeding benefits. Exclusive pumpers (EPers) exclusively express/pump their milk rather than nursing directly at the breast for a variety of reasons, including failure to latch, infant inability to efficiently suck, a need or desire to monitor intake, having an infant in the neonatal intensive care unit, and/or an actual or perceived low milk supply (Felice et al., 2017a; Glenn, 2020; Jardine, 2018). There is a small number of breastfeeders who simply choose to exclusively pump (EP) (Jardine, 2018).

Despite the increasing prevalence of EPing (Felice & Rasmussen, 2015), existing literature on EPing predominantly focuses on neonatal intensive care unit (NICU) settings, the macro- and/or micronutrient components in human milk, and quantitative data, such as secondary analyses of nationwide surveys. There is a glaring gap concerning the lived experiences of EPers, especially their information experience. Opinion pieces and advice, of varying quality, can be found online (e.g., Glenn, 2020; Lowrey, 2019; Monafu, 2020; Poovey, 2016; Singh, 2017), but there is little data on who EPers are, why they EP, how long they EP for, and their information and support needs and experiences. Given the potential for EPing to solve many problems that breastfeeders have (or perceive they have), the fact that EPers account for a growing proportion of breastfeeders, and the importance of maximizing breastfeeding rates, there is a critical need to conduct empirical research to collect accurate data actionable upon by breast

pump and accessory manufacturers, lactation consultants (LCs), and, above all, EPers themselves.

More specifically, identifying current gaps in EPing information, education, and support is essential so that strategies can be developed to fill these gaps. Implementation of a variety of evidence-based strategies—such as coordinated and collaborative research, modernization of LC training materials, development of best practices for providing support to EPers, and creation of physical and electronic information resources—is vital to remediate the knowledge deficits EPing, as a field, and EPers, as individuals, currently face. Improving the lived experiences of EPers and the practice of EPing more generally will increase the incidence, exclusivity, and duration of breastfeeding, thereby promoting child and parental wellbeing at both individual and population levels.

The *Breastfeeding Without Nursing (BWN)* study conducted for this dissertation research aims to fill the current gap in knowledge about EPers' lived experience, especially pertaining to the information that the need, how and from where they seek it, and the outcomes relating to the information they do—or do not—receive.

1.1. The *Breastfeeding Without Nursing* Study

The *BWN* study was expansive and exploratory, collecting data on a wide range of topics from a large number of current and/or former EPers. Qualitative and quantitative, cross-sectional and longitudinal data from was collected from over 2,000 EPers concerning their breastfeeding intentions and experiences, formula and solid-food feeding, breast pump use, and emotions, as well as their experiences of—and outcomes resulting from—breastfeeding-related information, education, and support.

1.1.1. Research Questions

This dissertation examines the individual and social factors that influence EPing and the lived experiences of EPers, particularly as it pertains to information. In order to fully understand EPers' information experiences, I first answer two background research questions:

1. Why do some breastfeeders exclusively pump? How long do they exclusively pump for?
2. How do exclusive pumpers feel about exclusive pumping?

I then answer the two main research questions at the heart of this dissertation:

3. What information do exclusive pumpers need, where do they get it from, and what barriers do they face? How do their information experiences affect their overall lived experience?
4. What support do exclusive pumpers need and where do they get it from? How do their experiences of support affect their overall lived experience?

In order to analyze the data to answer the research questions, three types of data analysis/interpretation were undertaken. Descriptive and statistical analysis was performed on quantitative data and an inductive thematic analysis was conducted on qualitative data. Finally, findings from both these analyses were interpreted through a socioecological lens to evaluate what individual, social, and cultural factors might have influenced the lived experiences of EPers and, thus, the findings. This methodology and my socioecological perspective are described in more detail in Chapter 2.

1.1.2. Significant Findings

Findings are described in Chapters 3–6; those of interest to specific groups are summarized here.

For those providing lactation support, the findings that most EPers do not want to EP, that EPing is sustainable, and that LCs did not receive glowing endorsements by most study participants are likely the most interesting and impactful outcomes of the *BWN* study. The finding that the less useful a participant perceived EPing information received from LCs to be, the less likely they were to seek medical help for an EPing-related breast health problem is alarming and act as a call to action to provide better quality information. Implications and recommendations for best practice relating to these findings are provided in Chapter 7.

For readers from public health and healthcare-related fields, the fact that a greater proportion of study participants were still feeding human milk at 6 months postpartum than the national U.S. rate should be heartening. Their commitment to feeding human milk indicates their awareness of its health benefits, although public health campaigns could improve their promotion of the benefits of lactation itself. That many participants were incognizant that they had an EPing information need should also be remedied through improved public health campaigns that include information about breastfeeding without nursing.

For those with information science-related interests, that information received through online support groups on social networking sites was of far higher perceived quality and usefulness, in terms of both quantity and accuracy, and highly trained sources (i.e., lactation consultants) were a poor source of information is a novel finding. The finding that many *BWN* study participants were completely incognizant of their EPing

information need extends St. Jean's (2017) finding into a new field. In addition, the application of the concept of incognizance adds novel nuance to the field of breastfeeding education.

This dissertation also extends the use of the socioecological model within information studies. My use of a socioecological perspective uncovers the influences on not only information seeking/acquisition (the basis of Williamson's (2005) ecological theory of information behavior), but on information *experience*, that is, individuals' "thoughts, feelings, senses, and actions; as well as their social and cultural influences" (C. Bruce et al., 2014b, p. 316) in relation to information. To the best of my knowledge, a socioecological perspective has not been used to assess underlying influences on individual's holistic information experience.

1.2. Overview

The next chapter, Chapter 2, details the *BWN* study's methodology, including an overview of the analyses performed. The process of inductive thematic analysis is described, a thematic map is presented, and the socioecological perspective through which I analyze the influences underlying the findings is explained. The chapter ends by reviewing the study limitations and the characteristics of its participants.

This dissertation is then organized by the four main domains associated with the research questions. the circumstances surrounding participants' EPing (research questions (RQ) 1; Chapter 3), their feelings about EPing (RQ 2; Chapter 4), their information experiences (RQ 3; Chapter 5), and the support they did—and did not—receive (RQ 6; Chapter 6). Within each chapter, themes were identified through analysis of participants' responses and are addressed in turn, first through a brief literature review, then by

presenting relevant *BWN* study findings. Each chapter ends with a discussion and socioecological analysis of the findings.

This dissertation concludes with Chapter 7. Based on the findings of the *BWN* study, existing breastfeeding literature, and my own personal knowledge gained from supporting EPers as an Advanced Lactation Consultant, I suggest best practices for those providing lactation care, as well as future avenues for EPing research relating to this field. I discuss the implications of the substantive findings of this study for public health and healthcare providers and, again, suggest possible future research. I then identify my contributions to information science and potential opportunities to further develop the use of a socioecological perspective to evaluate information experience. This dissertation wraps up with some concluding thoughts.

Chapter 2. Methodology

This chapter describes the methodology for the *Breastfeeding Without Nursing* (*BWN*) study, including the overarching research design as well as the specific data collection and analysis techniques employed. This chapter then closes with an analysis of the limitations of this study.

2.1. Research Design

As the goal of this research is to investigate the lived experiences of EPers, this study employed two main data collection instruments: an initial online survey that was open to both current and former EPers and follow-up online surveys sent periodically to a subset of participants who were continuing to EP. This study was reviewed and approved by the University of Maryland's Institutional Review Board (reference 1026503-2; See Appendix 1). Data were stored in compliance with the University of Maryland Institutional Review Board requirements. Measures to protect participant confidentiality included not collecting names of participants and asking only for an email address if the participant indicated willingness to participate further to enable linking of previous responses with the current responses (follow-up surveys only).

2.1.1. Initial Survey

An online survey was administered using Qualtrics (qualtrics.com) between March 7, 2017 and March 6, 2018. The survey consisted of 170 open- and closed-ended questions, utilizing matrix tables, Likert scale-type questions, sliders, and open text boxes where appropriate. Since participants were routed through the survey depending on their individual experiences (e.g., whether they were currently EPing, whether they wanted to

answer questions about their breast pump, etc.), no participant was eligible to respond to all 170 questions. An online survey of this length and format is ideal for this research because surveys allow for both quantitative and qualitative data to be collected in a form already convenient for analysis. Recruitment (see Section 2.2.1) through online groups naturally suggested a web-based format.

The most important factor for choosing this survey length and format was my own experience as an active member of the target population: I was aware that many EPers harbor feelings that their voices have not been heard and are therefore highly motivated to tell their stories. This survey provided them that opportunity and, therefore, a lengthy survey with a considerable number of open-ended questions did not have a detrimental effect on participants' willingness to participate. Open-ended questions are essential to uncover the subjective experience of EPers and to elicit meaningful stories in addition to measurable variables (Auerbach & Silverstein, 2003). Furthermore, although I am a former EPer, I am by no means an expert on the diversity of experiences emanating from it. Open-ended questions, analyzed through inductive thematic coding, allowed me to use participants as "expert informants" (Auerbach & Silverstein, 2003, p. 25) and collect data on topics that might have otherwise been missed if the surveys contained closed-ended questions alone.

Survey questions were developed from my own personal knowledge of, and published literature about, breastfeeding, EPing, and/or the prenatal and postpartum periods. In addition, I consulted with colleagues who are more experienced in survey methodology. After editing and testing the survey with academic peers, the near-final survey was pilot tested by four EPers (two respected leaders within online EPing groups,

the author of exclusivepumping.com and its companion newsletter, and a personal friend and EPer with a Master of Public Policy degree). These four testers took the survey and were given space to include comments, questions, and suggestions on the survey at the end of each set of questions. Based on their suggestions, I changed the wording of several questions and added questions about weaning off the pump and attempts to nurse both pumplings and other children. Testing also revealed some technical issues with the survey, which I subsequently corrected (e.g., the year of birth was only accepting single digit answers prior to correction).

The initial survey contained questions concerning the following categories (see Figure 1 for examples of questions contained in each):

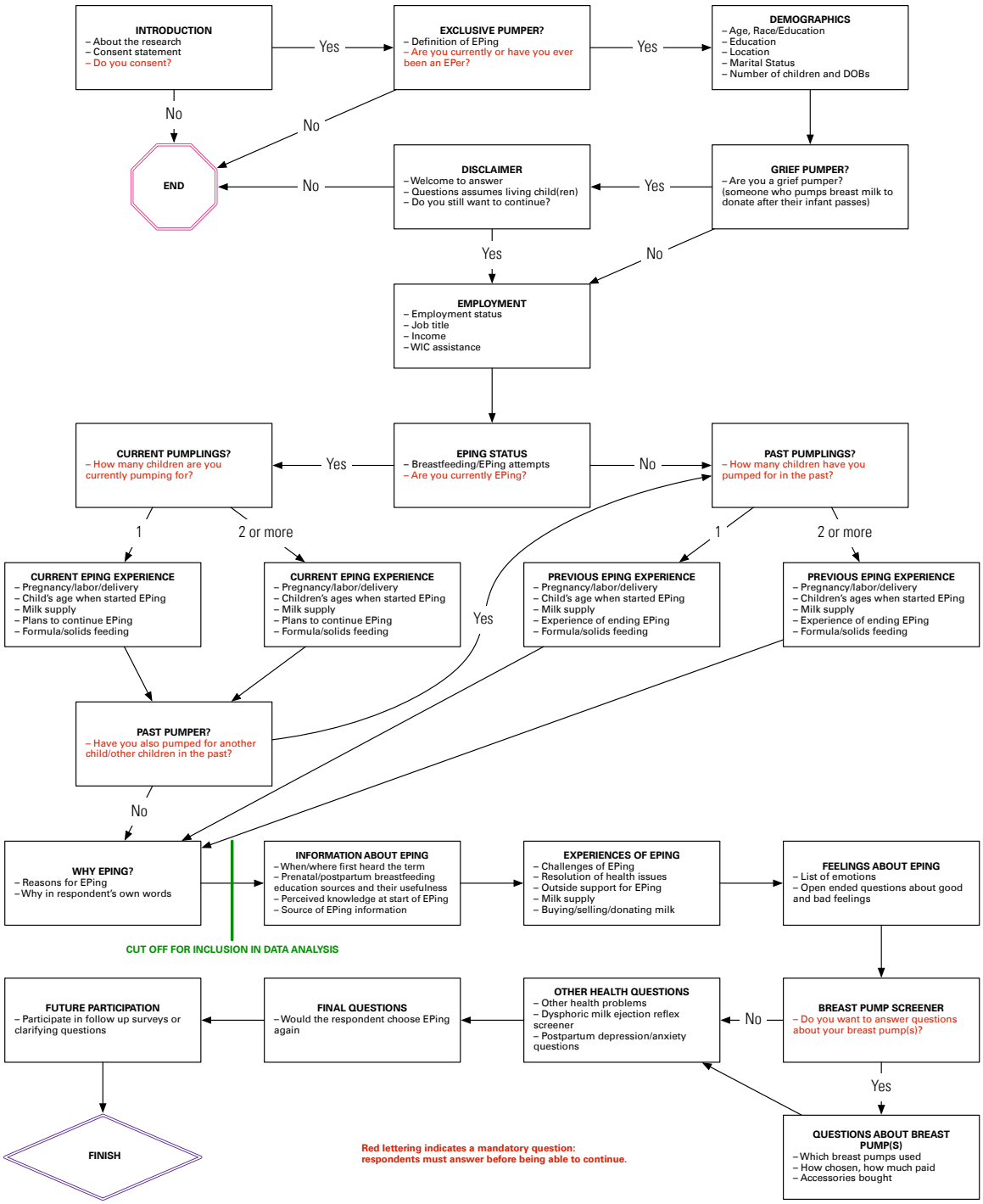
- Consent to participate;
- Eligibility criteria (see Section 2.2.2);
- Demographics;
- Grief pumping screening question;[3]
- Employment status and household income;
- Circumstances surrounding each episode of EPing;
- Reasons for EPing;
- Information behavior regarding EPing;
- Experiences of EPing in general;
- Feelings about EPing;

[3] The survey is worded as if children for whom participants pumped are still alive. Obviously, this is not the case for those that grief pumped. This question asked participants if they are or were grief pumpers; if they answered "yes," they were then warned about the wording used in the survey and asked if they still wanted to proceed. All those that answered "yes" to being a grief pumper opted to proceed with answering the full survey.

- Experience with various types of breast pumps;
- General health;
- Plans for future EPing; and
- Willingness to participate in follow-up surveys.

Figure 1 illustrates the different ways in which participants could be routed through the survey. The breadth of topics covered in this survey was intentionally expansive because of the lack of prior research and my desire to comprehensively study the lived experiences of this population. However, given the sensitivity of this topic, very few questions were mandatory (only those needed to correctly route participants through the survey, as indicated in red in Figure 1) and most offered a "I prefer not to answer" option. Appendix 9 contains the complete initial survey instrument.

Figure 1. Questions asked within each section of the initial survey, ways participants could be routed through the survey, and the cut off point for inclusion in data analysis



2.1.2. Follow-Up Surveys

Follow-up surveys were initially sent out every 2 months (follow-up surveys 1, 2, 3, and 4) then every month (follow-up surveys 5–14 onwards) to participants who had opted-in to receive follow-up surveys and had indicated on their initial survey that they were currently EPing. To limit its breadth and depth, data from follow-up surveys have not been included in findings presented in this dissertation. Analysis of this longitudinal dataset will be completed in future work.

2.2. Data Collection

2.2.1. Recruitment

A convenience sample was recruited by sending out an invitation to participate through an email newsletter and various online groups, a list of which can be found in Appendix 2. These recruitment opportunities were either known to me as a participant in these groups or were identified through an internet search for "exclusive pumping." Participants also shared the invitation to participate through on- and offline word of mouth, so as to create a snowball sampling effect. The initial *Invitation to Participate* is in Appendix 3.

2.2.2. Eligibility Criteria

The target population for this study was current or former EPers. The eligibility criteria for the initial survey were (a) at least 18 years of age and (b) either a current or former EPer. Participants confirmed they met these criteria and provided informed consent through three mandatory survey questions. Any participant answering no to any of these questions was barred from responding further. The initial survey collected

responses from March 7, 2017 to March 6, 2018 and was started 2,403 times; 2,365 (98.4%) responses satisfied these basic eligibility criteria.

2.2.3. Survey Response Collection

Participants accessed and completed surveys through a URL included on the *Invitation to Participate*, accessible on any internet-enabled device. They were able to save their progress and return to finish the initial survey within a month of starting it; however, no reminders were sent out as a participant's email address was only collected if they were eligible and interested in participating in follow-up surveys. Of the 2,403 participants who started the survey, only 1,566 (65.1%) finished the survey completely. An additional 439 (18.32%), for a total *N* of 2,005 (83.4%), participants completed the survey up to and including the questions about why they EPed, a critical data point for this study. This inclusion cut-off point is represented by a green line on Figure 1 above.

2.3. Data Analysis

2.3.1. Quantitative Data

Qualifying survey responses were downloaded from Qualtrics and cleaned in Microsoft Excel. Data were then analyzed in SSPS (Version 25.0.0.2) to calculate both descriptive and inferential statistics. A normal distribution of data was assumed for continuous variables and statistical significance was determined when $p < .05$. Since only the questions required for correct survey routing were mandatory, calculations in future chapters are based on the number of participants answering that question (i.e., missing responses are disregarded). Statistical tests performed included Chi-square tests of independence, independent samples t-tests, Mann-Whitney U and Kruskal-Wallis tests, and Cochran-Armitage tests of trend.

2.3.2. Qualitative Data

Since quantitative data only provides a superficial view of lived experience, participants' narrative responses were essential to provide valuable insight into the interaction between their experience of information and the context of that experience. Furthermore, qualitative data uncovers issues that are open (i.e., do not neatly fit into quantitative data categories) and unclear on a particular topic (Auerbach & Silverstein, 2003). By analyzing thematic patterns and how themes corresponded with other survey data and existing literature, "the significance of the patterns and their broader meanings and implications" (Braun & Clarke, 2006, p. 84), can be explored. Regarding thematic analysis, codes refer to individual phenomenon, such as *tongue ties* or *anxiety*, whereas themes refer to overarching concepts, such as *baby health* or *mental health*.

Qualitative data were coded in Atlas.ti (Version 8.4.4; atlasti.com) using inductive thematic analysis. Since coding the entirety of the qualitative dataset (over 500,000 words) was not possible, 30% of responses were randomly chosen (by random number generation on random.org) to be coded. It was clear that a saturation of codes had been achieved by this threshold (Saunders et al., 2018); in other words, the most common themes had already been identified and no additional dominant patterns emerged.

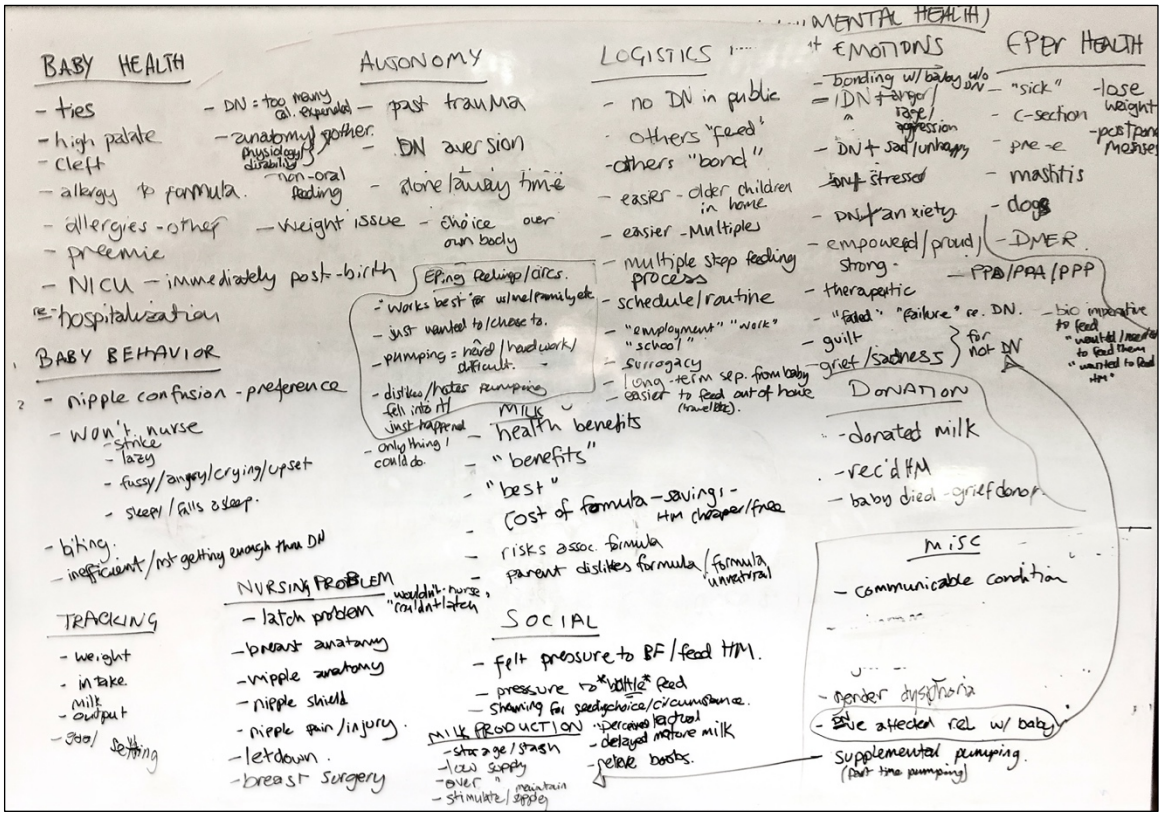
The methodology for coding follows the process set out by Braun and Clarke (2006), as illustrated in Figure 2.

Figure 2. Phases of inductive thematic analysis (Braun & Clarke, 2006, p. 87)

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Phase 1 was achieved by downloading the data from Qualtrics, compiling it in a format suitable for Atlas.ti, and reading through participants' answers. During phases 2 and 3, themes were identified at a semantic level (i.e., based on the explicit/surface meanings in participants' narratives), rather than interpretively. These phases of the coding process were assisted by two graduate research assistants (at separate times) helping to minimize researcher expectancy effects and maximize the accuracy and comprehensiveness of inductive theme identification. For the two open-ended questions with the most voluminous responses—Q97: *What are the reasons you exclusively pump(ed) instead of directly nursing?* And Q137: *In your own words, please explain your feelings about your EPing experience*—generation of initial codes was achieved by me and a research assistant both inductively coding one-third of the randomly-chosen responses and coming together to discuss our findings and develop a more coherent codebook, divided by various themes (Figure 3).

Figure 3. Results of a discussion about codes and themes



We then divided the remaining responses between us and assigned codes based on the codebook, with the option of adding codes if we felt they were needed, making sure to alert the other to the inclusion of any new codes.

For all of the other open-ended questions, I established an initial codebook by coding one-third of the randomly chosen responses, and then either I or a research assistant coded the remainder of the responses. Again, additional codes could be added at any stage as needed and then reviewed, combined if needed, and assigned to various themes (phase 3).

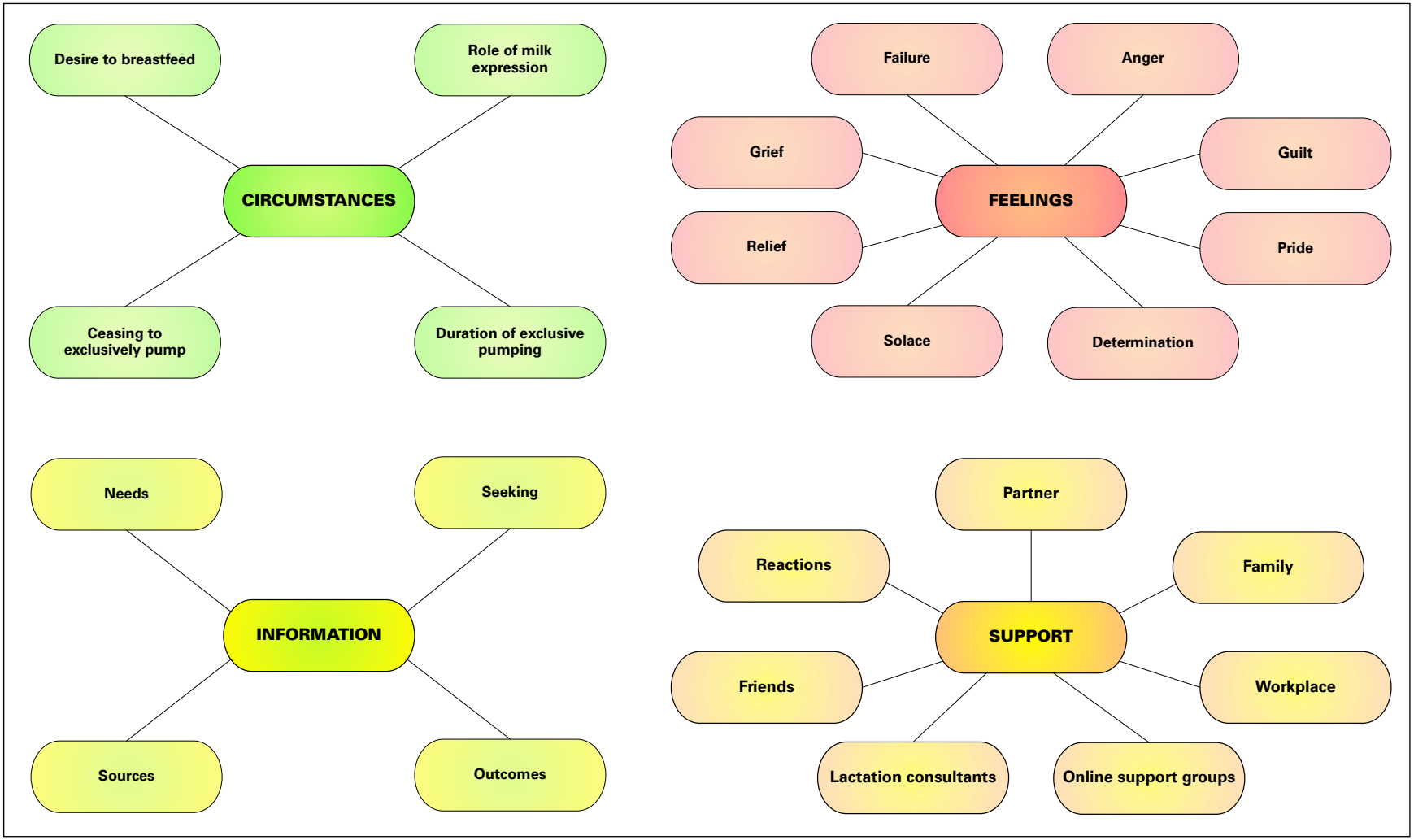
The results of phases 4 and 5, which were completed by me alone, are contained within this dissertation (phase 6). In reviewing the whole data set (phase 4), it was clear that themes repeated themselves across multiple open-ended questions: they were not

neatly contained within each distinct question, as participants had written about a plethora of topics in response to any given question. Thus, throughout this dissertation, specific open-ended questions are not referred to unless findings pertain to that single question; when the term "open-ended questions" is used, it refers to responses to any of the questions listed in Appendix 4.

As briefly introduced in Chapter 1, four main domains, each mapped to a research question, are addressed in turn. These domains are: *the circumstances surrounding participants' EPing* (RQ 1), *their feelings about EPing* (RQ 2), *their information experiences* (RQ 3), and the *support they did—and did not—receive* (RQ 4). Within each domain, themes were identified, as per phase 5, to create the thematic map illustrated in Figure 4.

Each chapter of this dissertation (phase 6) addresses one of the four domains, divided into sections by theme. An illustrative (but usually fictional) quotation starts each chapter and theme section, so as to capture the essence of the findings. "Vivid, compelling extract examples" (Braun & Clarke, 2006, p. 87) were selected from both the randomly chosen coded responses and from searching all responses for keywords and/or phrases. In order to improve readability, a minimal amount of editing was performed on participant quotations, such as the correction of obvious spelling mistakes (e.g., "brestfeding" to "breastfeeding"), adding apostrophes to contractions (e.g., "werent" to "weren't"), and capitalization (e.g., "i" to "I").

Figure 4. Domain and thematic map



2.3.3. Socioecological Analysis

Based on the work of Bronfenbrenner (1977, 1979, 1986), McLeroy et al. (1988), and Williamson (1998), my final analysis (phase 6; Braun & Clarke, 2006) of the underlying influences on the lived experiences of EPers, and thus the findings of this study, is situated within a socioecological perspective. Through this lens, an individual is seen as the center of multiple layers of interdependent environments—*systems*—that reciprocally interact with and influence one another. In his ecological systems theory, originally developed within the human development field, Bronfenbrenner (1977, 1986) set out five systems within which an individual exists and develops: *microsystem*, *mesosystem*, *exosystem*, *macrosystem*, and *chronosystem*. Bronfenbrenner (emphases original) defines these as follows:

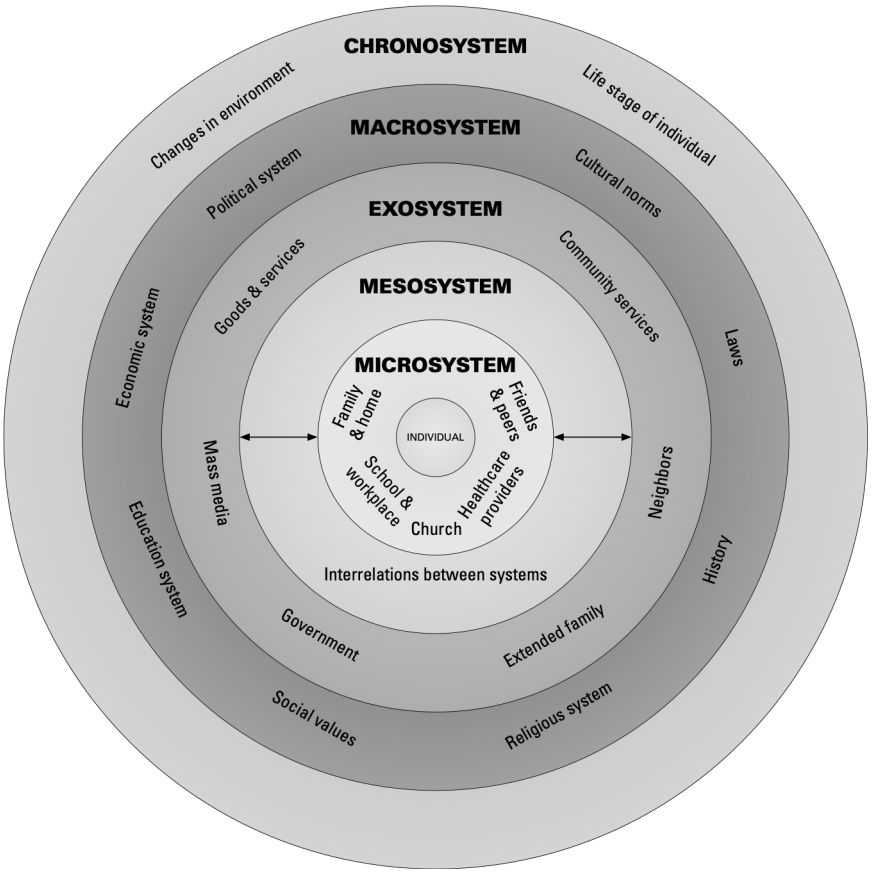
1. "A microsystem is the complex of relations between the developing person and environment in an immediate setting containing that person (e.g., home, school, workplace, etc.)" (Bronfenbrenner, 1977, p. 514).
2. "A mesosystem comprises the interrelations among major settings containing the developing person at a particular point in his or her life. … A mesosystem is a system of microsystems" (Bronfenbrenner, 1977, p. 515).
3. "An exosystem is an extension of the mesosystem embracing other specific social structures, both formal and informal, that do not themselves contain the developing person but impinge upon or encompass the immediate settings in which that person is found, and thereby influence, delimit, or even determine what goes on there. … They encompass, among other structures, the world of work, the neighborhood, the mass media, agencies of government (local, state,

and national), the distribution of goods and services, communication and transportation facilities, and informal social networks" (Bronfenbrenner, 1977, p. 515).

4. "A macrosystem refers to the overarching institutional patterns of the culture or subculture, such as the economic, social, educational, legal, and political systems, of which micro-, meso-, and exosystems are the concrete manifestations" (Bronfenbrenner, 1977, p. 515).
5. A chronosystem accounts for "changes over time not only within the person but also in the environment and … the dynamic relation between these two processes" (Bronfenbrenner, 1986, p. 724).

Bronfenbrenner's theory is represented in Figure 5.

Figure 5. Ecological systems theory, adapted from Bronfenbrenner (1977, 1986)



Recognizing that health behaviors (including breastfeeding) are heavily influenced by an individual's environment, McLeroy et al. (1988) expanded Bronfenbrenner's theory to the health promotion and disease prevention field. In their model, five factors determine individual behavior:

> (1) intrapersonal factors – characteristics of the individual, such as knowledge, attitudes, behavior, self-concept, skills, etc. This includes the developmental history of the individual.
> (2) interpersonal processes and primary groups – formal and informal social network and social support systems, including the family, work group, and friendship networks.
> (3) institutional factors – social institutions with organizational characteristics, and formal (and informal) rules and regulations for operation.
> (4) community factors – relationships among organizations, institutions, and informal networks within defined boundaries.
> (5) public policy – local, state, and national laws and policies.
> (McLeroy et al., 1988, p. 355; *numbering original*)

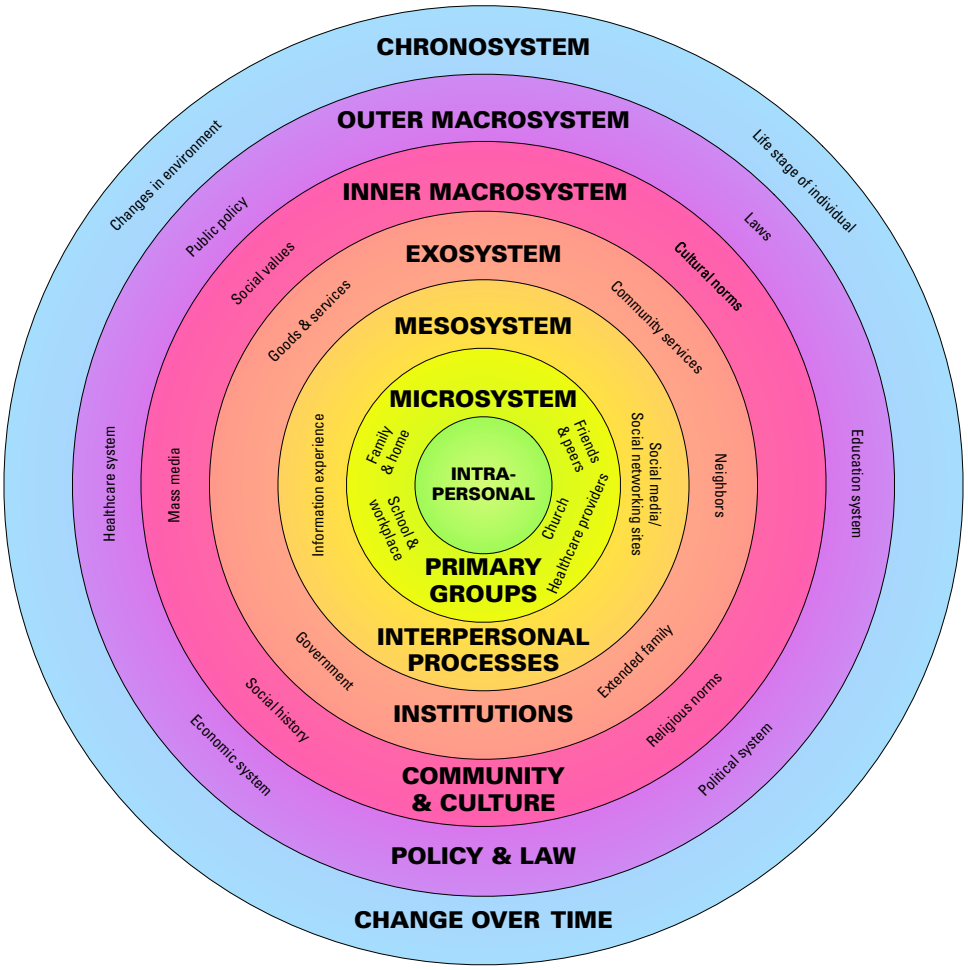
These five factors can be mapped to Bronfenbrenner's (1977, 1986) systems: McLeroy et al.'s (1988) intrapersonal factors (1) are at the very center of Bronfenbrenner's model; their primary groups in (2) constitute the microsystem, whereas the interpersonal processes can be likened to the mesosystem; institutional factors (3) are represented by the exosystem; and community factors (4) and public policy (5) are both part of Bronfenbrenner's macrosystem.

In the field of information studies, Williamson (1998) developed an ecological model of information use from her research of the information behavior of older individuals, which Savolainen (2009) classified as one model of everyday life information seeking (ELIS). Williamson found that particular variables, such as personal characteristics, socio-economic circumstances, values, lifestyles, and physical environments, influenced information seeking, acquisition, and use. As in Bronfenbrenner (1977, 1986) and McLeroy et al.'s (1988) frameworks, Williamson identified "layers" of influence ranging from intimate personal networks and wider personal networks to mass media and institutional sources. Williamson's continued application of her ecological model to different populations (the blind: K. Williamson et al., 2000; breast cancer patients: K. Williamson & Manaszewicz, 2003) has demonstrated that an ecological model has the "flexibility to include all influences on behavior at any stage of the information-seeking or information-acquisition process" (K. Williamson, 2005, p. 131).

Combining these ecological approaches provides the theoretical basis for my interpretation of the individual, social, and cultural factors that influence the lived experiences of EPers. The general structure of Bronfenbrenner's (1977, 1986) theory has

been retained, with the exception of splitting the macrosystem into two layers, the *inner macrosystem* ("community & culture," which contains social values, social history, and cultural and religious norms) and the *outer macrosystem* ("policy & law," which contains public policy, laws, and the prevailing economic, political, and healthcare systems). Additionally, McLeroy et al.'s (1988) second of five determining factors (interpersonal processes and primary groups) has been split and assigned to the microsystem ("primary groups") and the mesosystem ("interpersonal processes"). Included in interpersonal processes are technologically- and digitally-mediated processes, such as interactions with others on social media and in online support groups, as well as information experiences—"the complex, holistic nature of people's engagement with information in real-world contexts" (C. Bruce et al., 2014a, p. 4)—more broadly. The socioecological model used in this dissertation is illustrated in Figure 6.

Figure 6. Socioecological model used in this dissertation



Although all systems in the socioecological framework influence EPers and EPing, the *BWN* study predominantly collected data on factors contained in the three systems in the core of the framework: the meso-, micro-, and intrapersonal systems. These factors include those that participants interacted directly with every day or week and were the most prominent and important in their lives. Consequently, participants lived experiences were most often influenced by factors in the three core systems and thus account for the majority of the discussion in the socioecological analyses. Nevertheless, some study participants spoke to factors residing in the outer systems; these will be mentioned where relevant.

2.4. Limitations

Limitations are addressed in relation to specific questions where they arise; an overview is presented here.

The convenience and snowball sampling methods used in this study produced a non-representative sample and therefore findings from this study cannot be generalized. Although participants somewhat reflect the demographic of breastfeeders in general (e.g., Li et al., 2019), participants were even more likely to be married, White, and have higher than average household incomes and education levels than the average U.S. breastfeeder. This is addressed in greater depth in Section 3.2.2. In addition, 84.5% (1,694) of qualifying participants were resident in the United States; furthermore, 94.1% (1,886) came from the United States, Canada, Australia, New Zealand, and the United Kingdom—majority White non-Hispanic, English-speaking nations.

Another limitation was that there were a few survey questions that were poorly constructed and/or did not produce data that was ideal. For example, Q104: *Did you receive breastfeeding education* ***before the birth*** *of your child/children?* was poorly worded: participants may not have considered their own research/reading as "education."

Similarly, Q102: *When did you first hear the term "exclusive pumping?"* may have been ambiguous: for participants who had experienced more than one pregnancy and/or birthed more than one child at the time of answering the survey, it may have been unclear whether the answers *Before I was pregnant*, *While I was pregnant*, and *After I gave birth* applied to their first pregnancy/birth or subsequent ones. To alleviate this concern, some of the data analyses in the following chapters include only those who EPed for their first-born child.

A third limitation was that some questions with multiple checkbox answers led to analysis issues, particularly *What are the reasons you exclusively pump(ed) instead of directly nursing?* While this question provided the finding that most EPers had more than one reason to EP (see Section 3.2.3.1), it was not able to provide insight into the most important or main reason each EPer had for EPing.

Lastly, and as always, researcher bias plays a part in this research. As there are few existing phenomenological studies of EPing, I drew heavily on my own personal experience and knowledge, perhaps causing researcher expectancy effects. Utilizing research assistants for thematic analysis helped to mitigate some of this risk. In addition, I of course aimed to be neutral and comprehensive when designing the survey and systematic when analyzing the resulting data.

2.5. Participant Characteristics

Information about participants' characteristics are provided here. The median year of birth was 1986. Detailed demographic characteristics of the 2,005 participants submitting eligible responses to the initial survey are shown in Table 1.

Table 1. Demographic characteristics of participants (*N* = 2,005)

Characteristic	*n*	%
Year of birth (median = 1986)		
Before 1970	4	0.2
1970–1974	17	0.8
1975–1979	170	8.5
1980–1984	552	27.5
1985–1989	824	41.1
1990–1994	353	17.6
1995–1999	61	3.0
Missing/prefer not to answer	24	1.2
Race/ethnicity[a]		
White[b]	1,665	83.0
White Hispanic/Latinx	129	6.4
Asian[b]	99	4.9
Multiracial[b,c]	37	1.9
Black/African-American[b]	36	1.8
Non-White[d] Hispanic/Latinx	15	0.8
American Indian/Alaska Native[b]	5	0.3
Native Hawaiian/Pacific Islander	0	0.0
Missing/prefer not to answer	19	1.0
People of color (POC)[e]	*321*	*16.0*
Residence		
United States	1,694	84.5
Canada	89	4.4

Characteristic	*n*	%
Australia and New Zealand	55	2.7
United Kingdom	48	2.4
Other Europe[f]	15	0.7
Asia (not including the Middle East)[g]	48	2.4
Middle East[h]	5	0.2
Africa[i]	3	0.1
South America[j]	3	0.1
Missing/prefer not to answer	45	2.2
Education		
Some high school	13	0.6
High school or equivalent	106	5.3
Some college/university	350	17.5
Associate (2-year) degree	196	9.8
Bachelor's degree	608	30.3
Some graduate	128	6.4
Master's degree	452	22.5
PhD/JD/MD etc.	118	5.9
Trade qualification	29	1.4
Missing/prefer not to answer	5	0.2
≤ High school or equivalent	*119*	*5.9*
Some college/university or Associate degree	*546*	*27.2*
Bachelor's degree, trade qualification, or some graduate	*765*	*38.2*
≥ Master's degree	*570*	*28.4*
Household income[j]		

Characteristic	*n*	%
Less than 10,000	31	1.5
10,000–29,999	115	5.7
30,000–49,999	234	11.7
50,000–69,999	323	16.1
70,000–99,999	481	24.0
100,000–149,999	419	20.9
Greater than 150,000	274	13.7
Missing/prefer not to answer	128	6.4
Employment status[a]		
Full time	1109	55.3
Part time	358	17.9
Self-employed	114	5.7
Student	115	5.7
Stay at home parent	544	27.1
Unemployed	28	1.4
Disabled	11	0.5
Retired	0	0.0
On maternity leave	277	13.8
Missing/prefer not to answer	3	0.1
Relationship status		
Married	1,692	84.4
In a committed relationship	272	13.6
Single	26	1.3
Separated/divorced	13	0.6

Characteristic	*n*	%
Widowed	1	0.05
Missing/prefer not to answer	1	0.05
In a relationship	*1,964*	*98.0*
Not in a relationship	*40*	*2.0*
Number of children birthed		
1	1,289	64.3
2	532	26.5
3	129	6.4
4	34	1.7
More than 5	19	0.9
Missing/prefer not to answer	2	0.1

Note. Items in italics are calculated by grouping other response categories together; they were not available as response options for participants to select. These categories are used in later data analysis.
[a] Participants could select multiple options.
[b] Non-Hispanic/Latinx.
[c] This is an aggregate of participants who selected two or more answers.
[d] These participants selected either a single non-White race or multiple races as well as Hispanic/Latinx.
[e] POC is used to denote participants who do not identify as White non-Hispanic/Latinx (Moses, 2016).
[f] Finland (4; 0.2%); Ireland (3; 0.2); Germany (2; 0.1); Denmark (2; 0.1); Belgium (1; 0.1); France (1; 0.1); Greece (1; 0.1); Sweden (1; 0.1).
[g] Singapore (24; 1.2%); Malaysia (10; 0.5); India (6; 0.3); Philippines (4; 0.2); Hong Kong (3; 0.2); Indonesia (1; 0.1).
[h] United Arab Emirates (2; 0.1%); Israel (1; 0.1); Kuwait (1; 0.1); Qatar (1; 0.1).
[i] South Africa (2; 0.1%); Mauritius (1; 0.1).
[j] Peru (2; 0.1%); Guatemala (1; 0.1).
[k] U.S. dollars.

Chapter 3. *"It wasn't my first choice, but it was the only way my baby could get my milk."*
Domain 1: The Circumstances Surrounding Exclusive Pumping

This chapter examines the first theme identified within *BWN* study participants' open-ended responses: that of the circumstances surrounding their EPing journey. This chapter's first theme—*participants' desire to breastfeed*—takes a step back to explore why participants wanted to breastfeed in the first place, since had they intended to formula feed, they would have been unlikely to arrive at EPing as a way to feed their children. The desire to breastfeed motivated participants to find a way to feed human milk, despite not being able to do so through their first-choice method of nursing. Participants' reasons for EPing, as well as their sociodemographic characteristics are examined in the second theme, *the role of milk expression*. The third theme, *ceasing to exclusively pump*, is briefly introduced before addressing the final theme of this chapter, *duration of exclusive pumping*. A discussion of the socioecological factors influencing these themes ends the chapter.

3.1. *"I always wanted to breastfeed my baby."* Participants' Desire to Breastfeed

Before examining why *BWN* study participants EPed, it is worth considering why they wanted to breastfeed and/or avoid formula feeding in the first place, a topic they discussed at length in their responses to open-ended questions. Without this context, participants' drive to feed their own milk—and to seek information and support to do so—and the emotional consequences of not doing so through direct nursing, cannot be fully understood. While the health benefits of human milk and lactation were important to

study participants, these next few sections demonstrate that there is a lot more than these benefits behind the desire to breastfeed.

Amy Brown (2019b) starts her book, *Why Breastfeeding Grief and Trauma Matter,* by asking the question *Why does breastfeeding matter so much to women?* If breastfeeding did not matter to women, then it follows that they would not suffer grief and trauma if it did not occur. This is not to say that it does not matter to other caregivers, but at the heart of so many female-identifying parents'—mothers'—desires to breastfeed is a vision of motherhood and the kind of mother they will be. Although I have pledged to use gender-neutral language in my work, it is with regards to this topic that I must deviate. However, the fact remains that vast majority of breastfeeders are women, so speaking to the underlying motivations to breastfeed is essential to understanding *BWN* study participants' lived experiences as EPers.

3.1.1. Health Benefits

Human milk is more than just calorific sustenance for infants: it contains a complex and ever-changing combination of proteins, fats, carbohydrates, amino acids, antibodies, white cells, and beneficial bacteria. The purported benefits to those fed human milk include lower infant death risk from causes such as infectious disease and sudden infant death syndrome (e.g., Ip et al., 2007; Lamberti et al., 2011, 2013; Sinha et al., 2015; J. M. D. Thompson et al., 2017), especially for infants born prematurely (e.g., Abrams et al., 2014; Bartick et al., 2016; Hair et al., 2016; T. J. Johnson et al., 2015; Meinzen-Derr et al., 2009); improved gut health, microbiome, and childhood eating habits (e.g., Azad et al., 2013; Forestell & Mennella, 2007; LaTuga et al., 2014; Lemas et al., 2016; Moossavi & Azad, 2019; Skugarevsky et al., 2014); improved brain

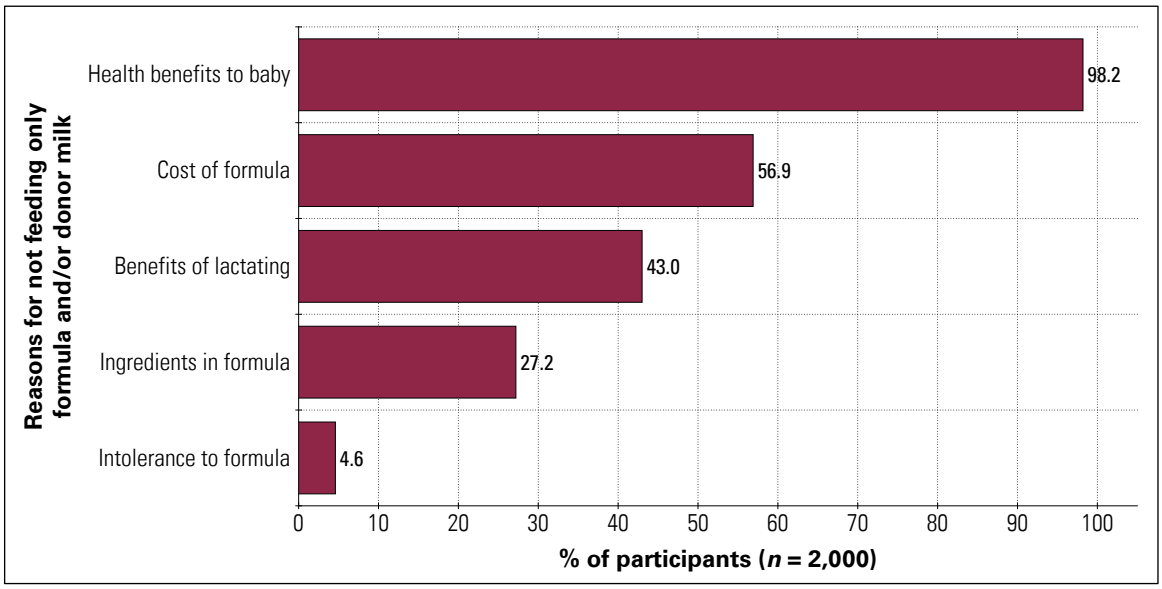
development and cognitive outcomes (e.g., Cleves et al., 2012; Horta et al., 2015a; Kramer et al., 2008); protection against respiratory illnesses, the negative effects of air pollution and nicotine, ear infections, dental problems, obesity, diabetes, and childhood leukemia (e.g., Amitay & Keinan-Boker, 2015; Bowatte et al., 2015; Duijts et al., 2010; Horta et al., 2015b; Napierala et al., 2016; Tham et al., 2015; Thomaz et al., 2018; Zielinska & Hamulka, 2019); and short-term responsiveness to infant age, gender, and length of gestation (e.g., Bauer & Gerss, 2011; Hahn et al., 2017; Mitoulas et al., 2002; Moossavi et al., 2019). Additional benefits of nursing directly at the breast include lower financial cost, "on tap" availability, and greater safety, since clean water and other supplies are not required.

Lactation provides the breastfeeder with equal or better sleep (e.g., Doan et al., 2014; Montgomery-Downs et al., 2010); lower risk of type 2 diabetes and cardiovascular disease (e.g., Aune et al., 2014; Gunderson et al., 2015; Stuebe et al., 2009); and protection against breast and ovarian cancer (e.g., Chowdhury et al., 2015).

In response to Q99: *What are the reasons you exclusively pump(ed) instead of feeding only formula and/or donor milk? (check all that apply)*, 98.2% (1,963/2,000)[4] of participants selected the health benefits of human milk to their child. Health promotion campaigns have been less successful at communicating the benefits of lactation to breastfeeders: only 43.0% (859/2,000) considered their own health as a reason to breastfeed. Figure 7 illustrates these responses.

[4] Since most questions in the survey instruments were optional, missing responses have been disregarded for the purposes of data analysis. Participant totals are thus presented as the number selecting a specific response (here: 1,963) out of the total number of participants answering that question (here: 2,000).

Figure 7. Responses to Q99: ***What are the reasons you exclusively pump(ed) instead of feeding only formula and/or donor milk? (check all that apply)*** **(*n* = 2,000)**



The benefit of human milk to children's health was reflected in responses to open-ended questions. Participants expressed the health benefits for their children in terms of nutrition and the immunological benefits:

> *Breastmilk is the most natural and nutritious food we can provide to our babies. I have nothing against formula but it obviously can't match the health benefits of breastmilk. (R506)*
>
> *I wanted my baby to get all the benefits of breast milk, especially the immunities. (R917)*

For some participants, being able to provide their milk to their child was even a life or death choice or due to a specific medical condition. For example:

> *My oldest was 2 months early. Breast milk helped save her life. She caught pertussis in the NICU and multiple doctors and nurses told me she wouldn't have survived if she hadn't had breast milk. (R132)*
>
> *My child has a bowel condition called Hirschsprung's disease and breastmilk is easier in his tummy. (R1292)*

While participants demonstrated a high level of awareness of specific benefits conferred by breastfeeding, more common were general expressions of human milk being "best," particularly in the context of providing the "best start" to life:

> *I want my children to have the best and believe breastmilk provides them with everything they need. (R510)*
>
> *I knew breast milk was best ... so that is what I wanted for my baby. (R2317)*
>
> *I wanted to make sure my child has the best start in life, and I believe that breast milk is a big part of that. (R2088)*

3.1.2. Avoidance of Infant Formula

Although questions remain about the macro- and micronutrient composition of expressed milk (Lucas, 2019; Moossavi et al., 2019), contaminants introduced during pumping (Flores-Antón et al., 2019; Reyes et al., 2018), and the effect of storage on human milk (El Din et al., 2004; Paduraru et al., 2019; Trasande et al., 2018), it is generally assumed that expressed human milk is preferable to formula.[5] While this opinion was likely shared by study participants given their almost-universal selection of health benefits as a reason to feed human milk, study participants were more concerned about the cost of formula 56.9% (1,138/2,000) than its ingredients (27.2%; 544/2,000).

In their open-ended responses, only a few participants portrayed breastfeeding as "free"; most characterized EPing—even with all the equipment needed—as cheaper or cost-saving when compared with infant formula. Some participants mentioned or implied their partners' influence in rejecting formula because of cost. Those participants whose children needed specialty formula due to allergy/health issues were especially concerned

[5] However, until large, longitudinal studies—that accurately record the minutiae of infant feeding practices—are conducted, a truly evidenced-based response to this question is not possible.

about its high cost. Although many participants talked about the time it takes to EP, none represented this as a financial cost.

Consistent with the higher cost of formula in the United States (Bonyata, 2019; First Steps Nutrition Trust, 2020; Grayson, 2016; Kent, 2006), a significantly greater proportion of participants resident there (58.9%; 997/1,694) were concerned about the cost of formula compared to those living in the rest of the world (45.9%; 123/268), χ^2 (df = 1, n = 1,962) = 15.863, $p < .001$, despite reporting statistically significant higher income levels, U = 101,112, z = –3.596, $p < .001$. Further research into the connection between the cost of formula and breastfeeding rates warrants attention.

For over one quarter of participants (27.2%; 544/2,000), the ingredients in formula were a reason to feed human milk. Reflecting existing literature and recent reports in popular media (Caron & Grose, 2019; DiMaggio et al., 2019; Kent, 2012; Rosenbloom, 2018), a significantly greater proportion of participants resident in the United States and Canada (27.9%; 497/1,783) were concerned about the ingredients in formula compared with the rest of the world (20.1%; 36/179), χ^2 (df = 1, n = 1,962) = 4.252, p = .039.

In their open-ended responses, formula was seen as unnatural and of poor quality:

> *I dislike formula and I feel that every little bit of effort to breastfeed should be exhausted before making the switch to something completely unnatural. (R2)*

> *[I] refuse to use mass produced American formulas with crappy ingredients. (R1467)*

As well as those reporting their child being intolerant or allergic to formula (4.6%; 91/2,000), digestive and stomach issues were often cited as negative side-effects of formula feeding:

> *I hate the idea of formula and what it does to a baby's gut. (R535)*

> *We've tried every formula under the sun when I had to supplement to try and help per our GI [gastroenterology] doctor. Turns out the best for him is Mama's milk. (R289)*

Lastly, some participants reported that their child refused to drink or just did not like infant formula. One participant simply stated, *"baby liked breastmilk better"* (R1552).

3.1.3. Bodily Function and Biological Imperative

Milk production after the delivery of the placenta after birth is automatic for the vast majority of gestational parents; continued production requires removal of milk from the breasts (Lawrence & Lawrence, 2015). However, "just because women are 'designed' to produce milk after birth, does not mean that they are required to use that milk from a sociocultural perspective" (Brown, 2019b, p. 16). Nevertheless, many participants indeed felt that because their body was producing milk, they should feed their child with that milk, raising to the level of a biological imperative:

> *I felt an overwhelming need to provide food for them. That is what mothers do, right? (R58)*

> *I was driven to provide breast milk at any cost. I certainly had the equipment mother nature provided me with, I was going to be damned if I didn't utilize it. (R411)*

Others highlighted the uniqueness of the milk for their own child. For example:

> *Breast milk is liquid gold. It is designed specifically for your baby's needs and if I am able to produce I feel an obligation to give my child the best possible nutrition. (R283)*

Like R283 in this last quotation, some participants felt that their ability to make milk obligated them to breastfeed. However, others focused on the *amount* of milk they were producing—*"I had plenty of milk, so why not?"* (R168)— suggesting that there is a quantitative threshold at which breastfeeding becomes worthwhile.

3.1.3.1. Birth Trauma

There are two more aspects of bodily function and biological imperative that participants wrote about in their open-ended responses. The first was birth trauma. Birth trauma is distinct from participants' type of labor and delivery, which are discussed in Section 3.2.2. Aspects of birth, such as feelings of loss of control, high levels of intervention especially if unexpected, lack of privacy and dignity, fear for baby's safety, and poor postnatal care (The Birth Trauma Association, 2018), can contribute to birth trauma, but whether an event is traumatic is ultimately "in the eye of the beholder" (Beck, 2004). Birth trauma and stress delay the production of mature milk (Chapman & Pérez-Escamilla, 1999; Dewey, 2001; Dewey et al., 2003; Dimitraki et al., 2016; C. Lau, 2001) which, in turns, increases the likelihood of breastfeeding problems.

However, Beck and Watson (2008) found that breastfeeding was a "tale of two pathways" for those who experienced birth trauma: in one group, birth trauma propelled parents to display "sheer determination to succeed" (p. 228) with breastfeeding; conversely, others experienced insufficient milk supply, intruding flashbacks, and detachment. The former group is particularly representative of EPers in the *BWN* study; while they conveyed determination to succeed with breastfeeding for many different reasons, birth trauma was a significant motivating factor. For example:

> *We conceived via IVF, then at 17 weeks pregnant I learned a had a complete placenta previa and would likely have to have a scheduled C-Section. I wanted so bad to have something normal, and not medically controlled. So I decided that would be breastfeeding. When she couldn't latch I felt like I was failing at everything. I couldn't conceive, deliver, or nourish my child the "natural" ways so by goodness I was going to pump! It was the only thing I alone could control. (R1076)*

Amy Brown (2019b) summarizes this motivation to breastfeed as making up for their body "'let[ting] them down' during birth … being able to breastfeed helped them see their body different. It worked again, like it 'should'" (p. 19).

3.1.3.2. Choice and Bodily Autonomy

The second aspect that is connected to bodily function and biological imperative is that of choice and bodily autonomy. Breastfeeding (or *not* breastfeeding) can be an assertion of bodily autonomy and a way to reclaim a sense of self. Some participants felt that they were exercising control and choice, especially with regards to switching from nursing to EPing:

> *I felt better that I was finally taking charge of how to feed my baby (R332)*
>
> *Pumping was something really good that I still could make a choice to do for her. (R2208)*

However, it is important to acknowledge that there is a complex discourse around breastfeeding, feminist perspectives, and choice. Schmied and Lupton (2001) aptly describe part of this "vexed feminist issue" (p. 246):

> Advocating breastfeeding not only for the health benefits for baby and mother, but also for the immense pleasure and intimacy that can be gained and for its contribution to "authentic" femininity, can be hazardous in its link to biology, essentialism and conservative arguments about women's reproductive and nurturing roles. (p. 246)

Indeed, *BWN* study participants felt this moralism and pressure to breastfeed, as aptly characterized by this participant:

> *I never would have thought about breastfeeding but every single doctor and all my friends that had babies basically shove it down your throat that that was the best and only way your baby should be fed so really it was an intimidation factor … Every time I felt like I wanted to quit I had the mental thought process of people judging me and so I just did it … I do agree that breastfeeding or exclusively pumping is a great way to [feed a] child but I also do not find anything wrong with providing your child with an alternate source but today's*

> *society is so judgemental and so demeaning that you're almost bullied into no other option. (R258).*

Nevertheless, for those who experienced past abuse, breastfeeding "can be a symbol of feminine power if you felt your power was lost to a man … Your breasts are the focus for nutrition, not sex" (Brown, 2019b, p. 22). In their recent review, Lange et al. (2020) concluded that there is a bifurcation in the experiences of abuse survivors that breastfeed: "some women viewed breastfeeding as not only positive, but believed it helped them cope with their experiences" (p.152), whereas, for others, breastfeeding difficulties "resulted from mothers associating their breasts with the experiences of CSA [childhood sexual abuse] or sex, having difficulty with physical closeness to their child, and feeling sexually aroused by the experience" (p. 152). One *BWN* study participant identified with the latter reaction:

> *I am a survivor of childhood sexual assault. I never really felt the "bond" that I thought I should feel while I was directly nursing and I blame the assault. I found that I felt more of a bond from feeding via a bottle but I think my experience may be slightly unique. I believe I would have felt a better bond through direct nursing if I had not been molested as a child. (R139)*

For other participants, EPing was a way to fulfill their biological imperative while minimizing the potential negative associations with past abuse. For example:

> *Due to past sexual harassment I was very uncomfortable with the idea of breast feeding. I discussed with my counselor and we decided it wasn't worth the potential emotional toll to attempt to breast feed. I wanted my baby to get breast milk for the health benefits and exclusive pumping has been great for us both. (R900)*

One participant struggled not only against their own past experiences, but was then shamed by healthcare providers (HCPs) for making the decision to formula feed. Ultimately, however, EPing became a healing experience and restored their sense of bodily autonomy:

> *I grew up in a house with sexual abuse. I was taught boobs are for boys. Putting a child to breast felt abusive. I chose formula. My doctors made me feel like the world's worst person for making this decision. They pushed and pushed until I agreed to try a pump. I cried through the first month of pumping. After that I felt empowered. Pumping became therapy for me. It gave me control of my body. I was able to pump for and feed three additional babies during my journey. (R220)*

3.1.4. Breastfeeding as Central to Mothering

Setting aside both feminist debates about whether breastfeeding empowers or encumbers women (e.g., Akass, 2013; Blum, 1993; Wolf, 2006) and those who question the long-term benefits of breastfeeding full-term, healthy infants in high-income countries (e.g., Colen & Ramey, 2014), the fact remains that breastfeeding is central to the concept of motherhood for many. For some, being a "good mother" requires breastfeeding (Marshall et al., 2007; Schmied & Barclay, 1999); likewise, being good at breastfeeding is to be good at mothering (Cooke et al., 2007; Marshall et al., 2007). Some scholars have even gone so far as to say that it is "an 'authentic' or 'true' feminine self that is partly discovered and experienced via breastfeeding" (Schmied & Lupton, 2001, p. 244, citing: Dignam, 1995; see also, Hartrick, 1997; Van Esterik, 1989). It is important to note that, as almost two thirds of the participants in Schmied and Lupton's (2001) study confirm, breastfeeding can be a "disrupting, distorting and disconnected experience, and for some, it was experienced as excruciating, violent and mutilating" (p. 244).

For most study participants, breastfeeding was an integral part of a pregnancy–birth–parenting continuum:

> *I had always intended to have a natural birth, full term baby, and directly breastfeed my baby afterwards for as long as they wanted to. (R507)*

> *I always expected that I would breast feed my son (the idea in my head of motherhood just involved nursing). (R170)*

For some, so strong was their notion of breastfeeding being central to motherhood that they characterized breastfeeding as a moral imperative, the "right thing" to do. For example:

> *I knew I was doing the right thing and there was no way I would ever quit. I would never put my feelings ahead of my son's nutrition. (R802)*

Strong feelings about breastfeeding and motherhood were by no means universal, however. A few participants were ambivalent and saw breastfeeding as something that they would try before committing fully. These participants were in the minority however, likely because of the very nature of this study: EPing requires time and energy, usually over and above that of a successful direct nursing relationship. For instance, in Kristin Wilson's (2018) book, *Others' Milk: The Potential of Exceptional Breastfeeding*, EPing and EPers were included in their definition of "exceptional" breastfeeders, that is, "when breastfeeders violate any of the spoken or unspoken social norms or institutional rules in order to breastfeed" (p. 6). Those who do not feel as strongly about or committed to breastfeeding would be less likely to break these norms and, therefore, would be more likely to switch straight to formula feeding if their trial of breastfeeding did not work out.

3.1.5. Bonding

Despite only tenuous links between direct nursing and improved bonding (Britton et al., 2006; Cuijlits et al., 2019; Gibbs et al., 2018; Hairston et al., 2019), the desire to breastfeed in order to bond endures. Many study participants expressed this as a motivation for breastfeeding and saw bonding as an automatic consequence of nursing:

> *Before I had my daughter I was so excited to nurse, to create that bond and give her the best nutrition. (R343)*

> *I wanted to exclusively breast feed. I believe in the power of mothers milk and the bond of breastfeeding. (R2339)*

As discussed in Section 4.6 bonding through nursing was not the experience that many participants had imagined.

3.2. *"I intended to pump, I just didn't think I'd be only pumping."* The Role of Milk Expression in Breastfeeding

As addressed in this section, most breastfeeders expect to express their milk at some point. However, for most participants in the *BWN* study, they did not expect it to be the only way that they fed human milk to their child(ren). This section explores the rates of milk expression, both non-exclusively and exclusively, the characteristics of those who express milk, and the reasons why participants EPed.

3.2.1. Rates of Milk Expression

Despite the desire of most breastfeeders to nurse at the breast, milk expression, usually with a breast pump, is ubiquitous among breastfeeders in high-income countries. For example, in the United States, O'Sullivan et al. (2019) found that 94% of the respondents who had breastfed had expressed milk at some point, with half (51.5%) expressing milk several times per day. In Loewenberg Weisband et al.'s study (2017), 15% of respondents had already started expressing before leaving the hospital after giving birth, with over one quarter (29%) of them citing latch problems as the reason.

On January 1, 2013, provisions in the U.S. Patient Protection and Affordable Care Act 2010 (ACA; Patient Protection and Affordable Care Act, 2010) requiring insurance companies to cover breastfeeding support, supplies (including a breast pump), and counseling at no cost took effect (Hawkins et al., 2015). This has likely resulted in a dramatic increase in the amount of milk expression occurring in the United States. For

example, Hawkins et al. (2017) found an 11-fold increase in the number of breast pump insurance claims in Maine between 2012–2014.

Unfortunately, despite the increasing ubiquity of breast pumps, most breastfeeding data collection instruments do not distinguish between different modes of human milk delivery (Keim et al., 2019; O'Sullivan et al., 2019; O'Sullivan & Rasmussen, 2017), therefore leading to poor data about the prevalence of EPing.[6] Using a validated survey (O'Sullivan & Rasmussen, 2017), O'Sullivan et al. (2019) found that at 3, 6, and 12 months postpartum, respectively 11%, 14%, and 13% of respondents who were still providing human milk at these points in time were EPing. It is worth noting that the majority of respondents in this study gave birth prior to the ACA taking effect, therefore these proportions may have increased. If 10–15% of breastfeeders EP at some point, there would be approximately 300,000–450,000 new EPers per year in the United States alone.[7]

Globally, the rates of expressing and EPing vary. In Johns et al.'s (2016) Australian sample, 85% of respondents had expressed milk and 83% owned a breast pump by 6 months postpartum. Clemons and Amir (2010) found that the EPing rate in Australia was 3.8%, but this has likely increased given the age of this data.

In east Asian countries, milk expression is common. For example, by 6 months postpartum, Jiang et al. (2015) found that 88% of their 385 Shanghai breastfeeders had

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[6] Recent research led to the development of a "Brief Breastfeeding and Milk Expression Recall Survey," which aims to collect data that adequately reflects contemporary infant feeding practices (Keim et al., 2019).

[7] In 2018, there were 3,791,712 births in the United States and a 83.5% breastfeeding rate on discharge from hospital (Martin et al., 2019). This is the equivalent of 3,166,080 new breastfeeders in 2018. If 10% of these EPed at some point, there would be approximately 316,600 new EPers per year.

expressed milk; by 6 weeks postpartum, 22.6% of participants were EPing. The Singaporean rate of EPing is around 16.6% (Pang et al., 2017). Bai et al. (2017) reported that the rate of EPing in Hong Kong ranged from 5.1–8.0% in 2006–2007, increasing to 18.0–19.8% in 2011–2012.

In contrast, milk expression is not widespread in low- and middle-income countries. Attahiru et al. (2018) found that only 33.7% of the Nigerian urban working mothers in their study had ever expressed milk. Among working mothers in Nairobi, Kenya, Chege and Ndungu (2016) found that even fewer—18.9%—had ever expressed milk, predominantly through hand expression (62.5%). Similarly, in their study of 95 breastfeeders in Western Maharashtra, India, Prabhu et al. (2016) found that only 17.9% had ever expressed milk. Although no data was provided about whether milk was hand or pump expressed, only 17 (17.9%) of the respondents knew that pumps for expressing milk even existed. Given these low rates of non-exclusive milk expression, it seems unlikely that EPing is widely practiced.

3.2.2. Characteristics of Those Who Express Milk

Increased likelihood of breastfeeding in general is associated with being White non-Hispanic, being older, being married, having a higher education level, and access to private insurance (Li et al., 2019; Lind, Perrine, Li, et al., 2014; Skafida, 2009). Likewise, a number of studies have found that breastfeeders who express milk have higher levels of education, higher household income, and are more likely to be employed (Bai et al., 2017; Hornbeak et al., 2010; Labiner-Wolfe et al., 2008; Sutter et al., 2018). Bai et al. (2017) noted that:

> Lower-income women are less likely to be employed full-time and therefore do not need to exclusively express breast milk. Another possible reason may be that

> mothers with lower income are less likely to own an electric breast pump, which is commonly used in exclusive expressed breast-milk feeding. (p. 499)

BWN study participants reflect the characteristics of those who are both more likely to breastfeed and/or express milk. Only 16.2%[8] (321/1,986) identified as a person of color (POC; any race/ethnicity other than White non-Hispanic/Latinx). Among the 83.5% of participants resident in the United States, 14.4% (242/1,678) identified as a POC; the overall U.S. rate is approximately 40% (U.S. Census Bureau, 2020). Compared to U.S. residents, significantly more participants resident elsewhere identified as a POC (28.3%; 75/265), χ^2 (1, n = 1,943) = 32.293, $p < .001$.

Likewise, among the 996 (49.7%) study participants who were currently pumping for their first children at the time they responded to the initial survey, the approximate[9] mean age when they gave birth was 30 years, distinctly higher than the 2016 U.S. average of 26.6 years for age at first birth (Martin et al., 2018). Study participants were almost all in a committed relationship (98.0%; 1,964/2,004). The median household income was approximately U.S. $85,300 for all participants; as a point of comparison, the U.S. median household in 2018 was $61,937. Household income often reflects education level, so it is no surprise that study participants were also well-educated, with two thirds (66.8%; 1,335/2,000) having at least a bachelor's degree and/or trade qualification and over one quarter (28.5%; 570/2,000) had a master's degree or higher.

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[8] This is a different proportion from

Table 1 as that table calculated percentages from the entire sample of 2,005. Here, missing data are not included.

[9] Because the survey only asked for year of birth, it is not possible to calculate the age of participants precisely.

Other important characteristics also impact milk expression: for example, first-time breastfeeders and those who gave birth via Cesarean section (C-section) were found to be more likely to express, both in general and exclusively (Bai et al., 2017; Johns et al., 2013; Labiner-Wolfe et al., 2008). Breastfeeding problems in general—which in themselves increase the likelihood of milk expression—are also associated with labor induction (i.e., start) and augmentation (i.e., speed up) (Brimdyr et al., 2015; Cadwell & Brimdyr, 2017; Gabriel et al., 2013; Nissen et al., 1995); epidural or spinal anesthesia and/or analgesics administered during labor (Beilin et al., 2005; Dozier et al., 2013; Gubler et al., 2013; M. O'Connor et al., 2018; Torvaldsen et al., 2006), and less/no skin-to-skin contact between the birthing person/breastfeeder and newborn ("skin-to-skin"; Aghdas et al., 2014; Bier et al., 1996; Gubler et al., 2013; E. R. Moore & Anderson, 2007; Tootelian et al., 2014). The physical characteristics of the breastfeeder also play a part, with those of a higher BMI or with larger breasts more likely to express milk, perhaps due to discomfort with their appearance and/or difficulty establishing a latch (Johns et al., 2013).

Although data on the physical characteristics of *BWN* study participants were not collected, there was a high rate of C-section delivery—39.0% (908/2,329 births). To compare, C-section deliveries in the United States in 2016 accounted for 32% of all births (Martin et al., 2018). Likewise, at 36.0% (838/2,329), there was high rate of labor induction (augmentation data was not collected) compared to the 2016 U.S. rate of 25% (Martin et al., 2018); during 86.6% (2,009/2,321) of participants' births, anesthesia and/or analgesics were administered, again greater than the 2016 U.S. rate of 74% (Martin et al., 2018). Consistent with the findings from the studies above, participants felt

that these labor and delivery interventions, as well as long labors and lack of skin-to-skin with or without these other interventions, interfered with their ability to nurse. For example:

> *I really wanted to establish a direct breastfeeding relationship, but due to a combination of a) having sudden onset severe preeclampsia, which required I be induced at 37 weeks; b) a very long labor (52 hours) which ended in a required C-section; and c) my baby being in the NICU due to glucose level issues, he would not latch. (R878)*
>
> *I had an epidural and couldn't feel that my baby had a poor latch. [R2141]*
>
> *I had very high blood pressure at the end of my pregnancy and was induced and after 30 hours of labor had a very unplanned C-section. I wasn't provided much breastfeeding support in the recovery room, and while my baby attempted to latch, I was groggy and still hooked up to IVs and machines that made it difficult to hold her and help her latch. (R918)*
>
> *Right after my first child was born I was not given skin-to-skin. No health issues, they just didn't let me do it (I believe this contributed to our issues latching). (R1538)*

In addition to these perceived negative outcomes, labor and delivery interventions had quantifiable negative outcomes. Although the overall duration of EPing was not associated with the number of interventions, participants' milk supply was weakly correlated. Based on the milk supply codes set out in Appendix 5, a Spearman rank-order correlation analysis revealed that, as the number of labor and delivery interventions increased, participants' milk supply decreased, $r_s(1,428) = –.054$, $p = .04$. Relatedly, a Cochran-Armitage test of trend indicated that, as the number of interventions increased, so did the likelihood that a participant had fed infant formula at some point, $p < .001$. This finding supports existing literature about labor and delivery interventions relating to low or delayed milk supply as well as an increased risk of formula feeding (e.g., Bigelow et al., 2012; Dewey et al., 2003; Lind, Perrine, & Li, 2014; Liu et al., 2020).

3.2.3. Why do Breastfeeders Express Milk?

It appears that milk expression is an essential element to meeting breastfeeding intentions and goals (Felice et al., 2017a, 2017b): "All mothers felt that, to avoid or reduce formula use, they would need pumped HM [human milk] for when feeding at the breast was not successful, available, or desired" (Felice et al., 2017a, p. 6). In their systematic review, Johns et al. (2013) found that nursing difficulties, preterm or low birth weight infants, parental ill health, and breastfeeding inexperience often precipitated milk expression. Concerns about milk supply and/or to increase low supply, to provide milk for others to feed, to remove extra milk, because of sore or painful nipples, to relieve mastitis, and because of latch issues are all reasons to express milk frequently provided by breastfeeders (Clemons & Amir, 2010; Felice et al., 2016; Jiang et al., 2015; Labiner-Wolfe et al., 2008; Meier et al., 2013; O'Sullivan et al., 2016; K. Ryan et al., 2013). Those who start expressing milk before post-delivery hospital discharge report increasing their milk supply and problems with latching as reasons for using a breast pump (Felice et al., 2017b; Loewenberg Weisband et al., 2017); once infants are several months old, increasing or measuring milk supply remain important reasons to express milk, but having the freedom to go out or going back to work also become popular reasons (Felice et al., 2017b; Johns et al., 2016).

Having stored (frozen) human milk brings breastfeeders a sense of relief that their child could still be fed if they were not present or their supply went down (K. Ryan et al., 2013; Shealy et al., 2008). Most women (82%) in Clemons and Amir's (2010) study had frozen their expressed milk and in several studies, infants were fed their own parent's stored expressed milk after the parent had ceased to lactate (Geraghty et al., 2013; O'Sullivan et al., 2016).

Few studies provide data on why EPers pump rather than nurse. In her informal online survey, Glenn (2018) found that EPers EPed due to failure to latch, pain, a need or desire to monitor intake, a NICU infant unable to nurse, and/or an actual or perceived low human milk supply. Bai et al. (2017) found that supplementation with formula, lack of previous breastfeeding experience, having a planned C-section, and returning to work postpartum were all risk factors for EPing. Conversely, O'Sullivan et al. (2016) found that "the reliance on HM [human milk] expression … was typically incompatible with full-time employment" (p. 7). EPers in their study primarily EPed because their infant was not well and could not direct nurse or their child had started to refuse to nurse or started biting after a duration of successful nursing.

It is important to note that a number of EPers choose this form of breastfeeding either from birth, regardless of their ability to nurse, or after a period of nursing. For example, O'Sullivan et al. (2016) noted that "a small number of mothers … said that they preferred being in control of their own schedule and felt that exclusive expression and expressed-HM feeding allowed them to manage their time better" (p. 8). However, what proportion of EPers this accounts for has not been previously studied.

Rather than formula feed, Felice et al. (2017a) reported that the cost and health benefits provided the motivation (for all their participants, not just the EPers) to express and bottlefeed human milk, despite the inconvenience. However, those who nurse at least some of the time are only inconvenienced part of the time. Since EPers express 100% of the time, there is increased inconvenience, yet previous studies do not adequately address their reasons for EPing rather than nursing or exclusively formula feeding. Similarly, Keim et al. (2017) noted that the "characteristics of these women and how long they are

able to produce milk for their infant remain largely unexplored. This hampers efforts to provide tailored lactation support for these dyads" (p. 422).

3.2.3.1. Answers to Q97: What are the reasons you exclusively pump(ed) instead of directly nursing?

As illustrated in Table 2, the majority of participants (73.3%; 1,469/2,005) reported latch issues as the reason they EPed. Almost one third (28.4%; 569/2,005) *wanted* to monitor their child's intake of milk; this is distinct from *needing* to monitor intake for a specific health reason (20.6%; 413/2,005), such as excessive newborn weight loss. Almost one quarter (23.1%; 464/2,005) EPed because their child was in the NICU—the fact that the majority of the participants in this study did *not* EP for a NICU child distinguishes it from many previous studies, which have considered EPing as a predominantly NICU-related phenomenon.

Only 4 (0.2%) of the 2,005 participants responded with no *other* reason than they "just wanted to." There is a perception that EPing is a "lifestyle choice" (e.g., Grayson, 2016; K. Ryan et al., 2013), made for no other reason than breastfeeders perceive it as more convenient. Excluding gestational surrogates, participants separated from their children, and those reporting a child in the NICU as a reason for EPing (464/2,005), *at least* 89.8% (1,375/1,532) of participants EPing for non-NICU children had attempted to latch their child,[10] firmly rejecting Ryan et al.'s (2013) assumption that EPers favor "product" (the milk) over "process" (nursing). As discussed in Chapter 4, not being able to successfully nurse is a significant loss for most EPers.

[10] These participants had selected at least one of the following reasons for EPing: could not latch (any of the four options), not transferring well, nursing too painful, and/or biting child.

Table 2. Reasons for exclusive pumping (*N* = 2,005)

Reason	*n*	%
Could not latch, any reason[a]	1,469	73.2
Could not latch: no obvious anatomical explanation (breastfeeder or child)	678	33.8
Wanted to monitor intake	569	28.4
Not transferring milk well while nursing (including frustrated/crying baby, over/underactive letdown)	534	26.6
Could not latch: resolvable anatomical reasons in the child (e.g., cleft palate, unresolved tongue/lip tie)	486	24.2
Child/children in the NICU	464	23.1
Could not latch: minor anatomical issues in the breastfeeder (e.g., flat or inverted nipples)	444	22.1
Needed to monitor intake	413	20.6
Nursing too painful	398	19.9
Wanted others to be able to feed child/children	364	18.2
Went back to work and was pumping anyway	286	14.3
Low milk supply	269	13.4
Could not latch: unresolvable anatomical/health issues in the child (e.g., high palate, tube fed, swallow disorder, needed modified feeds)	165	8.2
Uncomfortable with the idea of nursing	165	8.2
Just wanted to exclusively pump	159	7.9
Multiple babies and it was easier	84	4.2
Biting child	47	2.3
Separated from child (surrogacy, adoption, other)	11	0.6
Grief pumper	4	0.2

[a] *Could not latch, any reason* represents the number of participants who selected at least one of the following responses:

- Could not latch: no obvious anatomical explanation (breastfeeder or child)
- Could not latch: resolvable anatomical reasons in the child (e.g., cleft palate, unresolved tongue/lip tie)
- Could not latch: minor anatomical issues in the breastfeeder (e.g., flat or inverted nipples)
- Could not latch: unresolvable anatomical/health issues in the child (e.g., high palate, tube fed, swallow disorder, needed modified feeds)

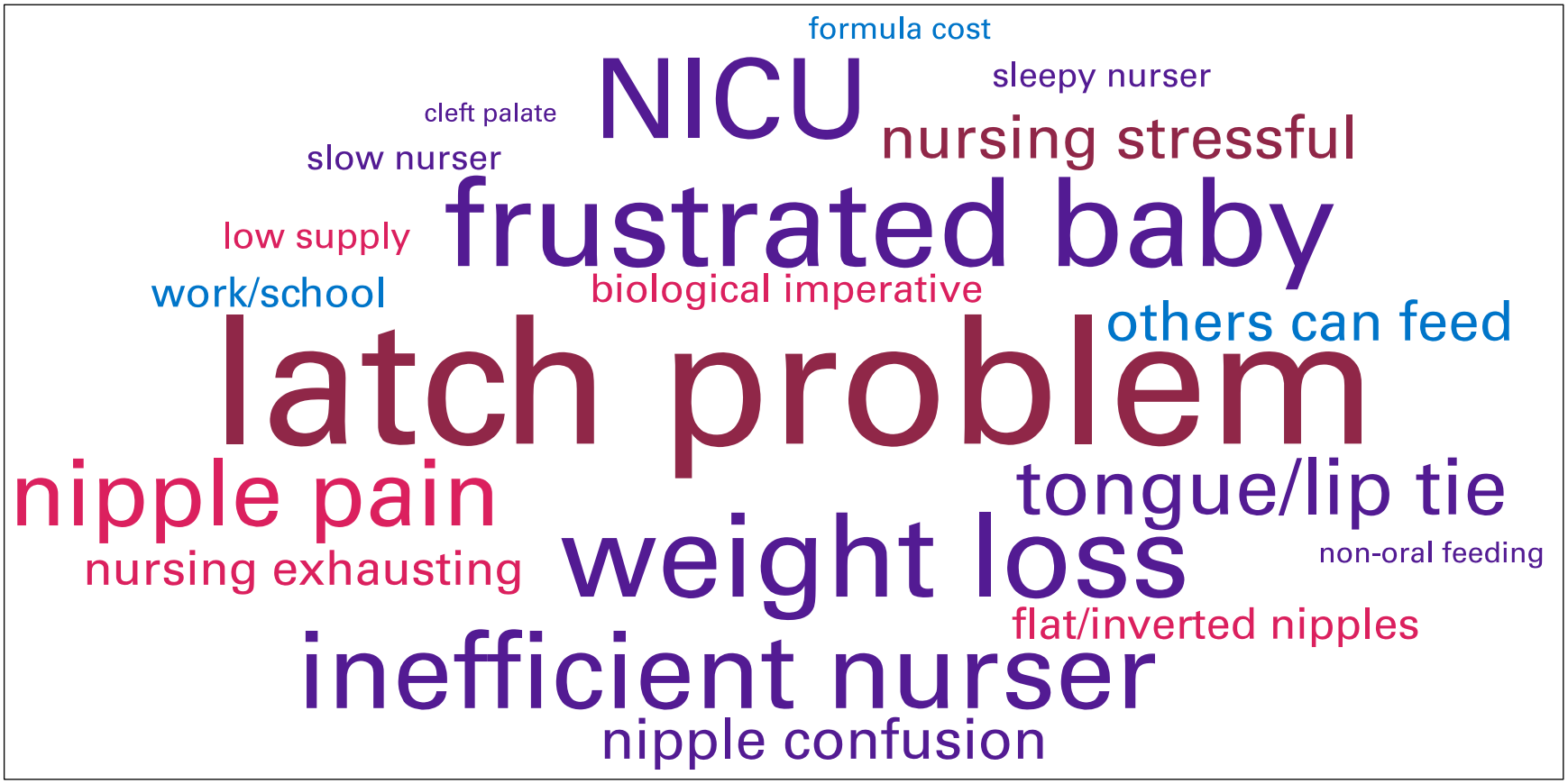
From the perspective of a lactation consultant, there is a lot to unpack from these findings and a great number of practical lessons to be learned from reading participants' descriptions of the difficulties they faced. For example, many participants reported difficulties associated with tongue ties (tissues in the mouth restricting tongue function), but struggled to have the sufficiently treated; others reported issues with their breast anatomy, but were not provided with empirically supported tools to assist them. While this will be the focus of future publications, it is not the emphasis of this dissertation.

3.2.3.2. Answers to Q100: I would love to hear why you exclusively pump(ed) in your own words.

Unfortunately, as Q97: *What are the reasons you exclusively pump(ed) instead of directly nursing?* was a "check all that apply" question with no subsequent ranking, it is impossible to determine the primary reason each participant had for EPing. However, additional richness is added through analysis of participants' open-ended responses, especially to Q100: *I would love to hear why you exclusively pump(ed) in your own words.*

The 1,530 (76.3%) participants who provided a response to this question wrote just over 195,000 words in total, demonstrating the magnitude and complexity of the responses provided. The word cloud in Figure 8 demonstrates the top 20 reasons that emerged from a content analysis of participants' answers to this question.

Figure 8. Word cloud of the top 20 reasons for exclusive pumping identified from a content analysis of responses to Q100: *I would love to hear why you exclusively pump(ed) in your own words*



Notes. Font size represents the number of responses that contained this theme. Purple indicates child-related themes; dark red indicates breastfeeding mechanics issues; blue indicates logistical themes; and pink indicates breastfeeder-related themes.

Unsurprisingly, dominant reasons—latch problems, weight loss requiring intake tracking, nipple pain, inefficient nursing (≈ milk transfer problem), NICU baby—reflect participants' answers to Q97. However, two additional important reasons emerged from the content analysis, the first being a frustrated baby when trying to nurse. Participants described heart-wrenching situations. For example:

> *He would latch for 40 minutes and still take a 2 oz bottle immediately afterwards. Between that and him screaming bloody murder every time we tried, I decided it was better that he was fed than that my own desires were fulfilled. (R4)*
>
> *I would try to latch my daughter at least once a day and we would both be crying because we couldn't get it right. (R501)*
>
> *I decided to EP because it was so emotionally draining and upsetting having my baby fuss and cry every time I tried to nurse and pumping and bottle feeding was easier in that respect. (R414)*
>
> *I really wanted to nurse, but my son spent hours screaming at the breast and I was so sore and tired it wasn't worth it anymore. (R317)*

This frustration caused negative emotions and/or consequences for the breastfeeder and those around them:

> *I found breastfeeding [nursing] so frustrating. We couldn't get a good latch and every time we failed, it felt like my baby was rejecting me. (R804)*
>
> *Once I saw how much more at ease everyone was with me EPing, I made the switch. I wasn't crying in pain, our baby wasn't crying in frustration & my husband wasn't trying to console us both. (R243)*

The picture of a tired, hungry, and frustrated breastfeeding dyad was painted many times over, with participants often setting the scene in their own homes in the first few weeks after hospital discharge. Pumping was often "resorted to" in order to alleviate this situation.

The second additional reason that participants wrote about was so-called "triple feeding": when multiple feeding infant methods, such as nursing, pumping, *and*

bottlefeeding (formula and/or expressed milk), are used at a single feeding time. Given that newborns need to be fed 11–14 times per day, this leaves little time for anything other than nursing (which often takes 20–30 minutes in the newborn stage, particularly if it is not going very well), pumping, feeding, and washing feeding/pumping equipment. For example:

> *I had a toddler at home, my husband was having a breakdown and triple feeding 8–10 times a day was literally killing me. I was at risk for PPD [postpartum depression] and something had to go so I stopped trying to nurse and made the decision to EP at this point for my own and my family's sanity. (R205)*

The number of responses mentioning triple/multiple feeding demonstrates the ubiquity of this practice, yet there is a dearth of literature concerning its impact on infant feeding outcomes. A recent, very limited study recommended that triple feeding be at least streamlined with the use of parallel pumping (pumping on one breast at the same time as feeding on the other) (McCue & Stulberger, 2019). Unfortunately, the experiences of *BWN* study participants show that this was not a standard recommendation. Instead, participants experienced unsustainable triple feeding that, for them, did not lead to the desired outcome of direct nursing.

3.2.4. Expressing to Donate, Share, or Sell Milk

Human milk must be expressed if it is to be donated to human milk banks or shared directly with others. As more is discovered about the benefits of human milk, especially to sick, preterm, and low birth weight infants, the demand for human milk grows. EPers are in a unique position to monitor and control their milk supply: they can create an artificially high demand and potentially create more milk than their child needs. While donating and/or sharing was not a primary reason for *BWN* study participants to EP, many had plentiful milk supplies and donated/shared/sold milk. Of the 1,699

participants who answered questions on this topic, almost one quarter (24.2%; *n* = 1,699) had donated or shared milk: 4.9% (*n* = 83) donated to a milk bank, 11.0% (*n* = 187) shared milk with someone they knew previously, and 13.7% (*n* = 233) shared milk with someone they met for the first time in order to share milk. Fewer participants had received milk from others: 6.8% (*n* = 115) received milk from a milk bank, 8.0% (*n* = 135) from someone they knew previously, and 3.5% (*n* = 59) from someone they first met to receive milk. Very few participants (2.1%; 35/1,699) had sold milk.

Those who only EPed to donate were the four participants who EPed because they had lost a child during pregnancy, labor and delivery, or as an infant and, instead of suppressing lactation, choose to express milk to donate. Oreg (2019) found that "taking on a temporary donor identity allowed grieving mothers the time to process their loss and reconstruct their shattered maternal identity and their physical identity as females" (p. 3). One participant summed up her experience of breastfeeding after loss as follows:

> *I very much loved EPing. It was a way to keep Cooper close in mind and heart. It was time I considered "spent with him" so I loved it. It was challenging, but it was beautiful. It forever changed my life for the better. My mental health was affected the most, and it gave me renewed purpose and brought so much light to the darkness of losing a child. (Child's name retained with permission from participant; R# withheld so other responses cannot be connected)*

After completing a whole year of pumping after losing Cooper at 22 weeks' gestation and donating large quantities of milk as can be seen in Figure 9, this participant has continued to provide support for others pumping and donating milk after experiencing perinatal loss. Through her Facebook group, these breastfeeders can get the practical, informational, and emotional support from those who understand their devastation and devotional—something that many of them report (within the Facebook group) never having received, especially regarding continuing lactation after their loss.

Figure 9. Bags of milk ready to be shipped to the Mothers' Milk Bank of North Texas

Reproduced with permission from the participant. The postcard in the frame reads "There is no foot too small that it cannot leave an imprint on this world."

3.3. *"I reached the goal I set myself."* Reasons for Ceasing to Exclusively Pump

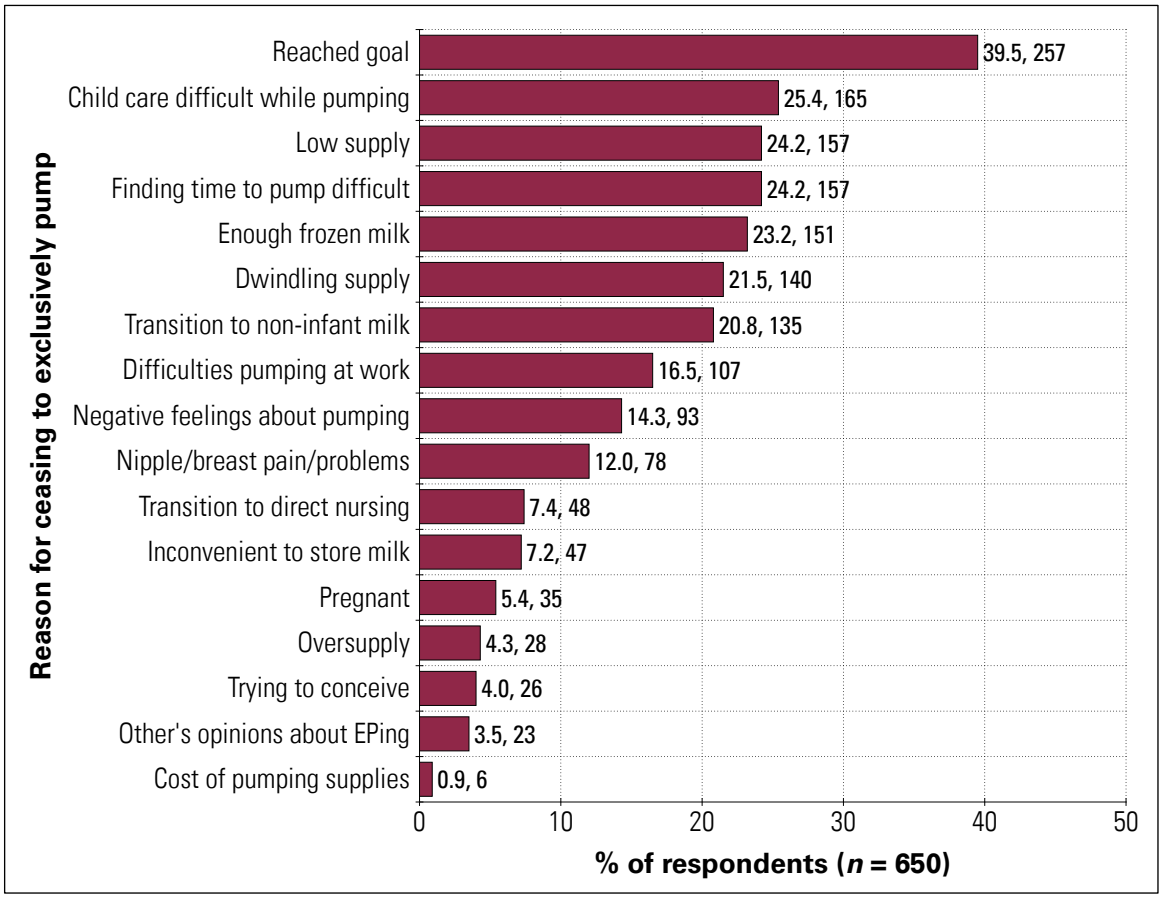
Little is known about why EPers cease to express milk. Participants who had completed at least one EPing journey had a variety of reasons for ceasing to EP (weaning off the pump), introduced here in Figure 10. It is heartening to see that the most popular reason for ceasing to EP was that participants had reached the goal that they set themselves. However, only two in five (39.5%; 257/650) selected this reason, whereas ideally all breastfeeders would reach their goals.

Aside from reaching their goal, reasons for weaning comprised three overarching factors: logistical barriers, such as difficulty with looking after their child(ren) while pumping, finding time to pump, and difficulties pumping at work; milk supply issues, including low supply (once again indicating that there is a threshold milk supply where

breastfeeding becomes “worth it”) and dwindling supply; and their infants “aging out,” that is, reaching the point where their child can transition to non-infant milk (usually cow milk) either because they have EPed for at least 12 months or because they have enough frozen milk to feed until their child is a year old. Few participants (7.4%; 48/650) ceased to EP because their child latched; however, it is less likely that those who successfully established a nursing relationship after EPing would have been recruited to this study, as they may transition to at-breast online support groups rather than stay in EPing-only groups.

Participants’ open-ended responses tended to repeat the reasons illustrated in Figure 10 without much further explanation. However, they wrote at length about the emotional experience of weaning off the pump; this is addressed in Chapter 4.

Figure 10. Reasons for ceasing to exclusively pump (*n* = 650)



3.4. *"I was told that exclusive pumping couldn't be done long term. They were wrong."* Duration of Exclusive Pumping Journeys

Several studies have found that non-exclusive milk expression does not lead to earlier termination of breastfeeding (Pang et al., 2017; Schwartz et al., 2002) and, in fact, might increase the likelihood of breastfeeding at 6 months (Win et al., 2006). However, previous research has found that those who rely on pumping to a high degree or EP cease breastfeeding sooner (Bai et al., 2017; Felice et al., 2016; Jiang et al., 2015; Keim et al., 2017; Pang et al., 2017). Keim et al. (2017) concluded that "exclusive pumping is a suboptimal approach to producing milk for durations currently recommended by major health organizations" (p. 426).

The duration of participants' EPing journeys were calculated using the method described in Appendix 6. Participants that had completed at least one EPing journey (34.9%; 700/2,005) provided duration data for 804 children (each child in a multiple birth counted separately). The approximate (see Appendix 6) mean duration of EPing was *at least* 8.0 months (*SD* = 5.2 months, range = 0 – 53.75[11]). Excluding those who ceased to *exclusively* pump because their child latched (*n* = 42; missing = 6), the approximate mean duration of EPing was *at least* 8.3 months (*SD* = 5.1 months, range = 0 – 53.75; *n* = 762). After also excluding the outliers (over 30 months/2.5 years of EPing; *n* = 2), the approximate mean only fell to *at least* 8.2 months (*SD* = 4.8 months, range = 0 – 26; *n* = 760). This duration is far greater than that found by previous studies (Geraghty et al., 2005; Keim et al., 2017; Pang et al., 2017).

When asked Q68/87: *How old, in months, was this child/were these children when you weaned from the pump?*, almost three quarters of participants reported that their children (74.3%; 603/812) were 6 months or older when they weaned from the pump. After excluding outliers (over 30 months/2.5 years of EPing; *n* = 3) and participants who ceased EPing because their child latched, 77.2% (593/768) of participants' children were at least 6 months old before they weaned from the pump; the mean age was 8.9 months (*SD* = 4.7 months, range = 0.5 – 26; *n* = 768). The mean age at which these children ceased to receive some human milk (i.e., fed stored human milk) was 10.6 months (*SD* = 6.0 months, range = 0.5 – 62; *n* = 747). After removing the outliers (over 30 months/2.5 years of providing some human milk; *n* = 5), the mean age that participants' children

[11] This is not an error. This participant has identified herself to me on my social media and indeed, pumped for her daughter for 4.5 years, *with a hand/manual pump*, and had stored milk to feed her until she was 5 years, 2 months old.

ceased to receive human milk was 10.3 months (*SD* = 5.5 months, range = 0.5 – 30; *n* = 742). This equates to participants having, on average, approximately 1.4 months'—6 weeks'—of stored milk, akin to O'Sullivan et al.'s (2019) finding that 10% of the breastfeeders (which included all delivery methods) in her study continued to feed stored milk for at least 4 weeks after stopping lactating. They found that the majority of respondents reported their breastfeeding duration as the duration they lactated, not fed human milk, potentially skewing human milk feeding rates lower. The even greater difference between the duration of lactation and duration of human milk feeding found in the *BWN* study adds additional urgency to the need for data collection instruments to accurately reflect current practices of infant feeding.

3.4.1. Exclusive Pumping Duration Correlates

Participants were asked to recall what their intended duration of breastfeeding was just before the birth of each child for whom they EPed. A Spearman rank-order correlation was conducted to assess the relationship between this intention and the duration of EPing achieved. There was a weak association: as breastfeeding intention increased, so did duration of EPing, $r_s(312) = .275$, $p < .001$.

While the connection between parity (number of births) and breastfeeding has not been reliably established, some studies have found that primiparas (first-time parents) are more likely to initiate breastfeeding, but multiparas (second-time or greater parents) achieve longer breastfeeding duration (Ford & Labbok, 1990; Li et al., 2008; Piper & Parks, 1996; Scott et al., 2001). Among *BWN* study participants, the majority (83.0%; 1,664/2,005) EPed for their first child, leaving only 341 (17.0%) of participants having had any previous infant feeding experience. Those who EPed for their first children did

so for a slightly longer duration (M = 8.2 months, SD = 5.2) than those who EPed for later children (M = 7.3 months, SD = 5.2). However, the difference in these means falls slightly short of significance, $t(662) = -1.749$, $p = .081$. Some responses suggested that this difference may be explained by the increased burden that EPing imposes when caregivers have other children to take care of. For example:

> *With our second [child] … pumping was a source of stress for me, just as breastfeeding was. I suffered PPD [postpartum depression] and had a highly active toddler with behavioural issues. It was too much. (R478)*

However, it was more common for participants to express that EPing was easier than nursing with other children:

> *It also is a little easier on me to EP with a toddler running around. I can make sure both of my boys are taken care of. (R2266)*

> *[EPing is] hard work but I have a two year old and it's just easier than having a baby attached all day. (R287)*

Therefore, it is unlikely that parity itself explains the difference in the mean EPing duration between those EPing for first children versus those EPing for later children.

Breastfeeding self-efficacy (BSE) is the belief in one's capabilities to perform the task of breastfeeding and/or achieve a breastfeeding goal (Brockway et al., 2017). The higher one's BSE, the better the breastfeeding outcomes. BSE is closely related to breastfeeding confidence: low breastfeeding confidence is associated with earlier cessation of breastfeeding and has been found to be more influential in decisions to stop breastfeeding than breastfeeding problems (Blyth et al., 2002). When confident breastfeeders—those with high BSE—do experience problems, they persist through them (Dennis, 1999) and believe that solutions will produce the desired outcome (Blyth et al., 2002).

Without testing each participant using the "Breastfeeding Self-Efficacy Scale" (Dennis & Faux, 1999), it is difficult to gauge their BSE. However, participants wrote about their confidence around breastfeeding. For some, continuing to EP was related to the lack of confidence to direct nurse:

> *I got so used to pumping and had a hard time transitioning to direct nursing. I tried for about 4 months, but then gave up. Part of it was fear, and a lack of confidence in my ability to nurse. (R1986)*
>
> *The LC at the hospital instantly had me using my breast pump, ever since then I haven't had the confidence in myself that I could breastfeed till full (R1709).*

Some participants' overall confidence was shaken by those around them—even more devastating, perhaps, because of the source of the comments. One participant shared:

> *The lactation consultant in the NICU didn't visit me until the day before we were discharged. She was rude and completely unhelpful. When she saw how uncomfortable and nervous I was with both nursing and holding the baby, and found out my husband was returning to work the next week, she told me, "You're going to have to get better taking care of him alone." That completely crushed my already faltering confidence. (R883)*

Many participants reported situations undermining EPing specifically:

> *I saw an LC through the pediatrician who kind of looked at me like unless you pump every two hours and massage all the time this isn't going to work. (R358)*
>
> *EPing was never mentioned in any of my childbirth or breastfeeding classes. They never talked about pump options or how to use a pump. Especially when I reached out to multiple LCs and didn't get any support with pumping it would have been so easy to give up. (R200)*

However, this often resulted in participants being even more determined to succeed (see Chapter 4), which they did, thus boosting their confidence and BSE.

3.5. Discussion

On the surface, participants' desires to breastfeed come from within themselves, that is, they reside in the intrapersonal system. A feeling of a biological imperative,

including a desire to feed, bond with, and promote the health of their child, may indeed be driven by physiological processes. Given that McLeroy et al.'s (1988) definition of intrapersonal factors included the knowledge and attitudes of an individual, motivations such as the avoidance of infant formula, the health benefits of human milk, and a desire for bodily autonomy can also be traced back to the individual.

However, many of these influences have wider socioecological explanations. For example, caregivers may learn about the health benefits of breastfeeding from their own HCPs (microsystem), social media (mesosystem), or through public health campaigns on mass media (inner macrosystem). Attitudes towards infant formula are influenced by friends and family members (microsystem) as well as the prevailing norms within a community and culture (inner macrosystem) (Eidelman, 2016), not to mention the influence of popular media (social media, television, etc.) and the so-called "Mommy Wars," within which mothers are fighting an invisible war to fulfill the "good mother" ideology (Akass, 2012; Crowley, 2015; J. Moore & Abetz, 2016; Sutherland, 2010; T. S. Zimmerman et al., 2008). Elements of the outer macrosystem, such as economic systems that influence the cost of formula, political systems and laws that implement (or not) the WHO's (1981) *International Code of Marketing of Breast-milk Substitutes*, and healthcare systems' regulations concerning receiving and distributing samples of products from for-profit companies, are pervasive influences on societal attitudes towards infant formula.

Milk expression in general is associated with demographic, social, and cultural privilege factors (race, ethnicity, income, education, age, social supports, ability to access HCPs, and so on) existing in multiple systems of the socioecological model. Since the

BWN study did not collect data on other feeding methods and was not a representative sample, it is difficult to confidently draw conclusions about associations between EPing and privilege. Nevertheless, the avenues of recruitment and the resulting convenience sample likely do not explain the entirety of the privileges experienced by many participants. As described throughout this dissertation, EPing requires a significant time commitment, practical and emotional support, significant information literacy skills, and financial means to buy a breast pump (if not provided through a health care plan), additional/replacement pump parts, and pumping accessories. These resources are likely easier to come by for those with increased privilege, thereby enabling more successful EPing. To what degree these characteristics impact EPing initiation, exclusivity, and cessation—and particularly if they impact EPing to a greater degree than direct nursing—warrants further investigation.

Findings in this chapter about why breastfeeders EP are, to the best of my knowledge, the most in-depth currently available. For most, EPing is not a "lifestyle" choice, but rather the result of a confluence of socioecological factors preventing successful nursing. For many, the interaction between aspects of their own body and that of their infant's (microsystem) prevented latching and/or trouble-free nursing. However, this is an over-simplification. As will be addressed in Chapters 5 and 6, many participants lacked adequate information and support and, while this study focused on participants' experiences of these in relation to EPing, it is clear that they were lacking in relation to breastfeeding in general. Although no empirical data exists to objectively support my opinion, it is very likely that at least half of the *BWN* study participants could have fulfilled their original intention of direct nursing had they received *optimal* breastfeeding

support (practical, informational, and emotional) in a timely manner. This support needs to come from most socioecological systems (see Chapter 6): in order to have established a successful nursing relationship, participants would have needed: ongoing support from LCs and from their own healthcare provider (microsystem), as well as from community breastfeeding supporters (exosystem); cultural norms and social values that set new parents up for success (inner macrosystem); healthcare systems that provide easy access to in-home lactation consultations (outer macrosystem); and political/governmental/economic systems that provide adequate paid family leave (outer macrosystem).

Likewise, factors within a variety of socioecological systems influenced the duration participants EPed for and their reasons for stopping EPing. The duration participants EPed for compare favorably with those breastfeeding through direct nursing: while 77.2% of *BWN* study participants were still EPing at 6 months postpartum, only 58% of U.S. infants born in 2015 still received any human milk at this age (CDC, 2019).[12] This is nothing short of impressive and certainly demonstrates that EPing is sustainable. However, given that participants were predominantly recruited from online support groups, they had regular access to the practical, informational, and emotional support provided by online support groups (mesosystem; see Section 6.6). Participants found a way to circumvent the socioecological barriers they experienced vis-à-vis nursing by utilizing the resources they could access within their systems; unfortunately, this is not universally achievable, often for lack of privilege (as examined above).

[12] To compare: British infants born in 2010: 34% (McAndrew et al., 2012); Australian infants born in 2010: 66% (Australian Institute of Health and Welfare, 2011). I could not find equivalent data for Canada.

Nevertheless, participants experienced a wide variety of barriers to continuing EPing. Again, while many of these may appear individual—low/dwindling supply, nipple/breast pain/problems, oversupply—there may still be external influences. For example, these issues may be the result of a physiological problem for which a participant cannot—or does not know how to—access sufficient medical care (microsystem/outer macrosystem). They may also be exacerbated by poor pumping practices that resulted from receiving incorrect advice (microsystem/mesosystem/exosystem/inner macrosystem). Logistical issues, such as caring for children while pumping and finding the time to pump, are symptoms of weaknesses largely within participants' primary groups (microsystem), such as their partners, families, friends, and/or workplaces. However, social and cultural norms (inner macrosystem), perpetuated by mass media (inner macrosystem), and laws and policies (outer macrosystem) contribute to the expectation that female-identified caregivers—mothers—can and should be the primary caregivers to children (and babies particularly) at the same time as managing a household and working outside the home.

Lastly, the effect of trauma and loss, both past abuse and as a result of pregnancy, birth, and/or postpartum care, undoubtedly has devastating consequences on an individual and their outcomes, including those surrounding infant feeding and EPing specifically. It is impossible to unpack the socioecological factors influencing the occurrence of traumatic events themselves within this dissertation; suffice it to say that there a complex web of socioecological factors influencing every traumatic event. For example, traumatic births may be influenced by an individual's HCPs (microsystem), the hospital as an institution (exosystem), the cultural norms at a societal level (inner macrosystem), or the

health, economic, or political system of the individual's country of residence (outer macrosystem). It goes without saying that these factors must be addressed in and of themselves; however, breastfeeders will still "come to the table" with a variety of negative life experiences that may lead them to EPing as opposed to nursing. It is vital that LCs and HCPs provide care that is sensitive to the trauma that some of their clients/patients have survived. As discussed in the next chapter, failing to fulfill their breastfeeding intentions and attain their goals was, for many *BWN* participants, a traumatic loss in and of itself.

Chapter 4. *"I mourned not direct nursing, but at least my baby got my milk. I'm proud of my achievement."*
Domain 2: Exclusive Pumpers' Affective Experiences

The subjective experience of milk expression is captured less often than quantitative data about it. Ryan et al.'s (2013) study demonstrates the spectrum of feelings about expressing milk. For example, negative feelings included: "I never got on with the expressing. ... I don't enjoy it. I dread expressing" (p. 473); "I had a hand breast pump that I tried to express milk with and it didn't ever work. I found it painful. I found it uncomfortable and I never got any milk" (p. 480); and "I felt like a cow or something. … I didn't like it. It's a bit animalistic. I don't feel comfortable expressing milk" (p. 480). Felice et al. (2017a) discovered complicated feelings in those who failed to express enough milk to satisfy their child's needs:

> Well, I just feel like a little bit like my self-worth is tied to my milk output. I feel like, "Oh, if I'm not making enough milk, I'm not going to provide for my baby." But that adds to the stress, and then that makes it harder to get the milk out. (p. 7)

Participants in Ryan et al.'s (2013) study also had positive experiences of milk expression, predominantly to do with the freedom it provides: "I now know that I can express milk. Because I'm breastfeeding, I don't have to be at home all the time. It doesn't mean that nobody else can ever feed the baby" (p. 474); "I did start expressing to a bottle, so my husband can feed him, because it's nice [for my husband] to feed him. He really likes it, he really does enjoy it" (p. 475). The sense of freedom and sharing feeding responsibilities were reflected by participants in a number of other studies: "With pumping it does kind of give you that freedom of, you know, that you can do things and you can leave" (Felice et al., 2017b, p. 7; see also, O'Sullivan et al., 2016).

BWN participants' expressions of emotions also included their feelings of grief and trauma concerning the loss of a nursing relationship. Previous studies have described the emotions felt as a result of this loss as: guilt, failure, shame, sadness, grief; inadequacy, isolation, anger, perceived judgment, and condemnation (Angell, 2017; Brown, 2019b; Brown et al., 2011; Dennis & McQueen, 2007; Labbok, 2008b, 2008a; Lee, 2008; Mozingo et al., 2000; Thomson et al., 2015). However, as Amy Brown (2019b) also found after reading the responses of over 2,000 women to the question "How do you feel when you think back about your breastfeeding experience? What emotions do you feel?" (p. 35), these characterizations do not truly convey the "depth and breadth of these emotions … We have the outlines of the picture, but not the detail and colour" (pp. 34–35). Brown identified seven themes in relation to the grief and trauma felt as a result of not meeting breastfeeding goals. The participants in her study felt: emotionally destroyed; angry and shocked; like a failure; guilty and ashamed; let down, envious of those who can breastfeed; and lasting regret.

This chapter addresses the gap that many other studies have left by not addressing the complexity of the affective experiences of EPers. Most *BWN* study participants experienced the failure to fulfill their breastfeeding goals and intentions, yet were not completely unable to lactate and feed their milk to their child(ren). They experienced some of the similar positive and negative feelings of others who express milk, but had the additional burden of doing it full time. Utilizing emotional themes from existing literature together with ascertaining emotions unique to *BWN* study participants, I identified the following emotions through participants' responses: grief, failure, anger, guilt, relief, solace, determination, and pride. In the sections below, I first present participants'

responses to two survey questions pertaining to their emotions, and then each of these emotional themes will be described in turn. Postpartum depression and anxiety are addressed before the chapter ends with a discussion that considers the socioecological influences on participants' affective experiences.

4.1. Survey Questions About Emotions

In response to Q136: *Below is a list of feelings and emotions. Select all those that you have ever felt about EPing*, participants were asked to select from 56 different emotions (see Appendix 6). Emotions selected by at least 20% (331/1,654) of participants are illustrated in

Figure 11.

Figure 11. Word cloud illustrating the emotions selected by at least 20% of participants in response to Q136: *Below is a list of feelings and emotions. Select all those that you have ever felt about EPing* (*n* = 1,654)

Notes. Font size represents the number of participants selecting this emotion.

The most often selected emotions and those selected by at least half of all participants were: frustrated (66.4%; 1,099/1,654), challenged (54.8%; 907/1,654),

discouraged (53.0%; 876/1,654), productive (51.0%; 843/1,654), disappointed (50.8%; 840/1,654), and devoted (50.7%; 838/1,654). Appendix 7 presents participants' responses for all 56 emotions.

Participants were also asked Q137: *In your own words, please explain your feelings about your EPing experience. How did you feel when you first started? How do you feel now? If you have weaned from the pump, how did you feel during the period of time you EPed?* The most prevalent responses from the analysis of participants' responses are illustrated in Figure 12.

Figure 12. Word cloud illustrating the prevalent themes in participants' responses to Q137: *In your own words, please explain your feelings about your EPing experience*

4.2. *"I mourned for the nursing relationship I thought that I would have."* Grief, Mourning, Heartbreak, and Devastation

During pregnancy, those who plan to nurse their child(ren) often prepare for the relationship they expect to have by attending a prenatal breastfeeding class, reading extensively, and purchasing nursing supplies such as bras and pillows. As discussed in Chapter 3, participants expressed their desire for the close, nurturing, and sustaining

nature of a trouble-free nursing dyad. The grief they experienced as a result of the loss of this relationship was profound for many participants. This participant still grieves their loss, despite breastfeeding for over a year:

> *I am grateful … [I] was able to feed my child for over a year exclusively with breastmilk. … I still feel a lot of grief that we were unable to breastfeed. I feel like I missed out on something important. (R1724)*

Some participants described being devastated by having to EP and, again, they continue to grieve the loss of nursing:

> *At the beginning, it [EPing] was a necessity. When I realized it was the only viable long-term way to provide breastmilk to my daughter, I was devastated. I continue to mourn the nursing relationship I hoped to have. (R867)*

A number of participants described heartbreak and crying over their loss. For example:

> *I felt heartbroken, guilty, awful. I wanted so badly to breastfeed but my baby couldn't latch, he lost weight when we got home from the hospital. I was told either give formula or go back to the hospital. It crushed me I had to give my baby breast milk I … pumped. (R1150)*

Hearteningly, many participants felt more positive about EPing as time went:

> *[When I] first started: Overwhelmed, feelings of grief of not being able to successfully direct nurse, exhausted, like I was tied to my pump and not able to enjoy my baby, like I was a failure. Now: I pump less frequently, so much more freedom. I try to focus on the positives like: anyone can feed her, I can sleep through the night, I can store milk and wean early. I'm still sad about not being able to direct nurse but I feel like less of a failure. (R77)*

> *I felt very cheated, defeated, and discouraged at first. I felt I couldn't provide what my baby needed with my low supply. Over time, I came to accept my journey somewhat and was happy I could still provide some milk for her and I felt strong because exclusively pumping is very badass (no better word). (R42)*

4.3. *"I felt like a failure and like my body had failed me as a woman and a mother." (R398)*
Failure, Inadequacy, and Rejection

As discussed in Chapter 3, breastfeeding is seen as central to mothering, so when nursing does not work out, many participants felt like they had *"failed as a mom"* (R381). This participant gets to the heart of why not being able to nurse is so devastating:

> *There was the physical reaction to being placed at the breast—she just hated it and would cry and cry and get all red and hysterical. Emotionally, it was so awful and I felt terrible constantly all day. Because all you do at first is feed the baby,* ***our failures at nursing were ever present and crushing.*** *… After about 2 weeks, I was a shattered emotionally drained mess. All I did was cry all day because I wanted to nurse her so badly. (R1478; emphasis added)*

Feelings of failure and inadequacy also revolved around the perceived inability to fulfill a female's biological imperative, as discussed in Chapter 3:

> *My body failed me. I was never meant to have my own children. I needed medical help to get pregnant, and my body couldn't feed the new baby. I was never meant to be a mom. I felt like a failure and like my body had failed me as a woman and a mother. I felt like an outcast in the new parenting world. (R398)*

> *When I first started, I was very disappointed that direct nursing did not work out for me. I felt inadequate and like I could not meet the most basic need my child had. (R1177)*

Feelings of inadequacy were also associated with not being able to make enough milk:

> *So much frustration and feelings of inadequacy. I felt like such a failure because I couldn't produce even the low end of full supply. It was so hard to put in so much work and still produce so little. (R2106)*

While no participant outright blamed their infant for not being able to nurse, many felt rejected by their children due to their negative reactions at the breast:

> *She made clear that it wasn't working for her anymore. She preferred to drink milk out of a bottle. That made me feel very rejected and insecure. (R1450)*

> *I feel my daughter is rejecting me every time she refuses the breast and screams for a bottle. (R1461)*

I was filled with a feeling of being worthless and broken. I felt I wasn't good enough for my child. I felt angry and rejected. (R689)

Participants also felt like they had failed their children as a result of weaning from the pump:

I'm currently trying to wean, it's hard emotionally. I feel the need to keep doing it, supply my daughter with the milk. (R406)

Weaning was hard. Even though I had over 4000 ounces in the freezer I felt like I failed her because I didn't give fresh for a year. Weaning hormones are real! (R708)

4.4. *"I was angry that we couldn't nurse like others and frustrated that nursing and EPing were so hard. It's unfair and I feel cheated."* Anger, Frustration, Injustice, Resentment, and Envy

At least one of these emotions was described in almost every single participant's responses at some point, such were the universality of them. To do justice to the myriad nuances giving rise to these emotions could be a dissertation in itself, so what follows merely skims the surface of this topic.

Participants were angry and frustrated at a plethora of different aspects of their EPing journeys: that nursing did not go as they had hoped, that they did not receive the support (practical, informational, or emotion) they needed for either nursing and/or EPing, that they needed to pump so long and/or so often, that they cannot properly care for their child(ren) while they are pumping, that they experienced health issues or pain related to pumping/lactation, and so on.

More participants selected "frustrated" than any other feeling from the list of 56 emotions presented in Q136. Many participants' frustration was caused by nursing; some were even frustrated by/at their own infants. EPing resolved these feelings. For example:

Direct nursing was always very stressful for me. I always wondered how much she was getting and if she was actually getting enough milk. I would often become

> *very frustrated with direct nursing because of this, in addition to my flat nipples and daughter always falling asleep at the breast. I used nipple shields and had countless lactation consultant visits. I began to dread feeding my child and would become frustrated with her, which is no feeling that any mother should have. (R749)*

> *I always wanted to breastfeed. I knew it was the best thing I could do for my baby. She would not latch … It became very frustrating. I was mad at myself and became angry at her for not latching. The guilt of that feeling led me to EP. I was devastated I could not breastfeed but I knew I could still give her the health benefits of my milk even though I lost the personal connection you have through direct nursing. The anger and frustration were not worth it. EPing was my best option. (R772)*

Conversely, others were frustrated by the time it took to EP or with not having enough milk. This often resulted in resentment and/or jealousy towards those who could nurse their child(ren). For example:

> *I also resented how easy other mothers made breastfeeding seem, and how they talked about how special that bond was. I was angry that I couldn't go out and do things because I was constantly pumping (every 1-2 hrs), feeding and cleaning. I had no time for anything but pumping and taking care of my baby. Social engagements were a source of stress, and I felt isolated, even with support. (R306)*

Although no participant referred to fairness or justice, many felt cheated, often in relation to nursing. For this participant, and others, these feelings were intertwined with other unfulfilled expectations:

> *I was absolutely heartbroken that I couldn't nurse my baby like I intended. My pregnancy, labor, delivery and breastfeeding were all taken from me for what I wanted it to be. I feel cheated out of the experience. I'm angry I was made to feel like I was less of a woman and a mom because of how everything played out. (R1565)*

For other participants, their feelings of being cheated—or robbed, as for this participant—related to poor support:

> *I hate pumping and am pretty mad we were robbed of our nursing relationship. When we were in the hospital and she wouldn't latch no one checked her for a tongue tie. They also told us not to feed her enough and she could've gotten really sick. They never should've discharged us until breast-feeding was established. …*

> *I'm pretty angry at the whole system that failed us and all the multiple people who should've told us to get her checked by someone who knew what they were doing and no one did. Everyone just blamed me for not trying hard enough and I blamed myself too. … The system failed us and robbed us of a nursing relationship. We would still be nursing now if she could direct nurse … I am taking away from her a year or two or maybe even more of getting the benefits of breast milk because of something that wasn't her fault and it's not fair. New moms deserve better and so do their babies. (R812)*

4.5. *"I feel guilty for not being able to nurse, I feel alone when I pump, and I regret not trying harder."* Guilt, Shame, Isolation, and Regret

That guilt is a natural part of mothering is a ubiquitous concept (e.g., Liss et al., 2013; Sutherland, 2010; Taylor & Wallace, 2012); it is certainly a strong emotion in relation to not meeting breastfeeding expectations and goals (e.g., Dennis & McQueen, 2007; Mozingo et al., 2000; Thomson et al., 2015). Consistent with many previous studies, *BWN* study participants felt guilty when they were unable to nurse. Even participants for whom nursing was impossible due to medical issues felt guilty. For example:

> *I felt inadequate in that I couldn't change my body to fit my baby's needs. His palate was wide open and I wanted to badly to fill it so he could nurse. I felt guilty that I couldn't. (R476)*

Many participants felt guilty about time spent away from their child(ren) while they were pumping and worried about the effect that might have on bonding:

> *I felt like I had trouble bonding with my son at first and I think that was due to always being hooked up to a pump. I still feel as if I am neglectful towards my children because I spend so much time pumping when I am home that taking care of them goes to my husband. I want to be able to wake up and snuggle my kids and instead I have to wake up and pump. … I apologize to my baby every day for not being able to hold him and cuddle with him. (R83)*

Feelings of loneliness and isolation were common, either as a result of being alone while pumping or because of a perceived or actual lack of support. For example:

> *It [EPing] was isolating. I would have to leave whoever I was with to go pump and be gone for 30 minutes at a time. My daily activities were often restricted by the schedule of having to pump in the beginning as well, which meant less leaving the house and less social interaction. (R1191)*
>
> *I felt alone without no support because no one I knew was going through what I was going through at the time. (R1632)*

Participants were also made to feel ashamed by others' reactions to their EPing (see Chapter 6). For example:

> *I've been berated and bashed for not nursing, even though we tried everything possible. I feel ashamed of myself. (R669)*

Many participants also expressed uncertainty about whether they had tried "hard enough" to nurse. For example:

> *I … decided to exclusively pump around the 2 month mark. I have had a lot of what-if moments since then and regrets. Would she have been able to breastfeed if I'd kept trying? Would it have been less stressful for our family if I had just gone to formula? These are all things I will never know. I just have to trust that I did the best I could. (R814)*

Weaning from the pump also created feelings of guilt and regret, even if participants were struggling with health issues:

> *Weaning, I felt very guilty. I went through a horrible depression, not eating and in the end it caused my supply to tank. I felt so guilty that my own needs got in the way of my baby's needs. (R476)*
>
> *Now, as my daughter just turned 5 months, I feel like an ultimate failure. After so many battles with medical issues due to breast problems (mastitis, mammary gland abscess) it has come time to wean and it saddens me to no end! (R1651)*

Conversely, some participants regret trying so hard to EP and wished they had formula fed from the beginning or weaned from the pump earlier. This participant expresses this sentiment:

> *I am glad I did this [EPing] but I feel like I went too far and tried too hard and hurt myself in the process. I feel like I should have went down pumps [reduced the number of pumps per day] months earlier and fed my baby not my freezer. … At the beginning it was so much pain and it feels like a blur now. In hindsight I wish*

I had put that energy into cuddle time or other nice moments for myself. I am still glad but I have regrets. I felt emptied out. (R179)

4.6. *"It was a relief to no longer struggle with nursing, but I was also very glad to stop pumping."* Relief and Freedom

Interestingly—and in contrast with previous studies of affective breastfeeding outcomes—participants also felt relief and freedom, predominantly at two different points in their EPing journeys: when they ceased to try to nurse and when they weaned from the pump.

As discussed in Chapter 3, participants often struggled with nursing, especially when having to cope with a frustrated, hungry baby and the exhausting cycle of triple feeding (see Section 3.2.3.2). This led to the frustration and resentment examined above; consequently, many participants were relieved when they settled on EPing as the way they would feed their child. For example:

The moment I switched from direct nursing to pumping, I was immediately happier and I was able to really enjoy spending time with my child instead of resenting the feedings which was constantly. (R177)

When I first started, I mostly felt relieved. Relieved of the worry about whether my baby was getting enough to eat, relieved that I could still give her my milk, relieved that I had a plan and a schedule to follow (I'm a very routine-oriented person). (R766)

Relatedly, some participants felt that they bonded better with their child because they no longer struggled with direct nursing. There was a sense of relief in participants' descriptions of this shift. For example:

I was just so emotionally drained from feeling like my son was rejecting me. EPing gave us the ability to connect again. I was able to pump and feed him with NO fight! (R99)

Although many participants found weaning off the pump to be difficult and that it induced feelings of guilt, most were very glad to be stopping EPing. Feelings of freedom and no longer being controlled by an EPing schedule or "chained to the pump" were ubiquitous:

> *Weaning was horribly emotional. I have never felt more guilty or panicky. I cried multiple times per day every day for weeks over incredibly insignificant things. But, once I was done, I felt so free and amazing and relieved, and like I had more time than I knew what to do with! (R1542)*

> *After completely weaning I feel a new found freedom. I get to enjoy my daughter and not have to carry that extra bag around everywhere! (R708)*

4.7. *"At least I could still feed my child my milk."* Solace and Consolation

The most common sentiment expressed in participants' responses to the open-ended question about their feelings as a result of EPing was solace in still being able give their child(ren) the best start. Still being able to feed their child(ren) their milk was consolation for not being able to nurse, which led to feelings of bonding and connection:

> *With EPing I love that I can still provide her the best nutrients without directly nursing and feel almost more bonded with her knowing I'm doing this all for her. (R2329)*

> *I felt like being able to feed my child breastmilk allowed me to have the attachment of my child to me for a little longer. While I hated being pregnant, I find breastfeeding—even if it is pumped [milk]—a way to keep giving my child the nutrition he needs to grow. I still feel I have that prebirth bond with him as a result. (R265)*

> *It also gave me a feeling of bonding with my child as she was getting my milk. She would refuse taking a bottle from others and only drink from me until she started nursery. (R1038)*

Since previous research has focused on being entirely unable to meet breastfeeding goals, the finding that EPers were glad to still be able to feed human milk to their child(ren) and that they felt a sense of bonding through EPing is important. The degree to which this

"consolation prize" mitigates the grief and trauma associated with being unable to meet their breastfeeding goals should be investigated further.

The other aspect of EPing that was highly treasured by the vast majority of *BWN* study participants—an "added bonus"—was the ability for other people to bond with their child through feeding. These quotations are just two of hundreds about this EPing benefit:

> *There are many things I have loved about pumping; my husband being able to bond with our daughter through feeding was the best part. (R139)*
>
> *I overheard my mom whisper to my sister during the first week that they could feed him a bottle! My mom never got to feed my nieces. As much as I wanted that bonding experience of nursing, I am so happy that [child's name] has a chance to have the feeding bonding experience with his dad, grandpa, grandma and aunts. (R358)*

4.8. *"I was determined to give my baby my milk any way I could."* Determination, Resolve, and Defiance

Similar to participants in Beck and Watson's (2008) study on breastfeeding after birth trauma, *BWN* study participants were propelled by their loss and trauma to succeed with EPing. Participants were determined to "make it work" to give their child their milk—"the best"—"no matter what." Expressions of determination were often accompanied by statements of goals: for example, *"I'm determined to make it to one year"* (R1830). One participant described how a certain image provided her motivation to continue EPing:

> *I felt determined, or resolute, or tough. Or something like that. I have a picture of her at 6 months sitting next to the pumps before we returned them to the rental agency. I wanted that picture because those pumps had kept her alive and growing her whole life. As terrible as it was, I would do anything for my kids. (R1191)*

Reflecting other research (see Ikonen et al., 2015), *BWN* participants EPing for infants in the NICU found their determination the in the fact that EPing was the only, or one of the only, things that *BWN* study participants could do for their child(ren):

> *I kept at it because I knew my fragile babies needed and deserved the best nutrition and honestly, as a NICU mom, it was one of the only ways I could take care of them in those early days. It sort of became my mission to make milk for them. (R960)*

> *I believed that my body had already failed my daughter by her coming early and providing breast milk was the only thing that I had been able to do for her for so long I didn't want to fail her with that either. (R1506)*

Lastly, many participants drew determination from a sense of defiance, especially in response to being told repeatedly that EPing was not sustainable:

> *Physicians and nurses constantly told me no one could EP and meet their babies demands. I proved them all wrong. (R301)*

> *I felt a lot of pride and accomplishment as the freezer stash grew - it was almost in a "fuck you" way to the hardship of the battle and journey that EPing took me on. It was tangible more so than just feeding my child and it somehow helped to relieve some of the self doubt and hate for not being a "good enough" mom to be able to breastfeed. (R1614)*

> *Above all else, [I felt] just flat out determined… [I felt] judged six ways from Saturday from some folks. And then defiant as all get out because … I had a hack on how to feed my kid breast milk in an unconventional way. Loved that. Kind of an "IN YOUR FACE WORLD" moment. (R411)*

4.9. *"Exclusive pumping was one of the hardest things I have ever done, but I am proud of what I have accomplished."*
Pride and Accomplishment

Almost all participants were proud of their EPing journey. For example:

> *Pumping and breastfeeding has made me feel more adequate and proud of myself than I ever have before. Not only did I give life to my child, but I also have continued to give her the best thing I possibly can for the first year of her life. (R835)*

> *I was determined to feed my baby and I was going to do everything I could. My milk took a week to come in, so I tried everything as I refused to be defeated. I*

> *hated it, and loved it. I am amazed at my ability to beat the odds and do what I could to meet my goal(s). I am proud of myself and what I have accomplished. I am just finishing my pumping journey and wouldn't change it for the world. (R2385)*

Many participants felt that EPing was a rewarding experience, despite being difficult:

> *It has been the most difficult, time consuming, rewarding experience ever. Many times I have wanted to quit but then I look at my babe and think about the other babies I have helped and feel very happy and fulfilled. (R465)*

> *Throughout the last year I definitely had many many ups and downs … Overall, everything considered, EPing is one of the best and most rewarding things I've ever done. (R73)*

Like R465, others also expressed that EPing was one of the hardest things they have done, leading to the feeling that it was also one of their greatest achievements:

> *I have worked my way up from literal drops to only an ounce or two short of the low end of full supply (24 ounces). I honestly feel like this is one of my life's greatest accomplishments. (R2106)*

> *I feel a serious sense of accomplishment. MANY women can NOT say they have done what I have done. I'm not looking for notoriety, but I'm proud of what I have accomplished and that is something no one can take from me. I now feel like this will seem completely irrelevant and insignificant in a few years, but at the time, it was very important to me. (R722)*

As R722 observes, there is a possibility that participants' strong feelings of pride and accomplishment will wane as time passes; however, it seems likely that the profound effect of such impactful and complex emotions, especially so early in their journey as parents for those EPing for their first-born children, would reverberate throughout the rest of participants' lives. Again, this would be a fascinating topic for future research.

4.10. *"Exclusive pumping did not make my postpartum depression worse—not being able to nurse did."*
Postpartum Depression and Anxiety

Postpartum depression and postpartum anxiety (PPD/PPA) are distinguishable from feelings and emotions, as they are diagnosable mental illnesses. PPD and PPA are,

unfortunately, not uncommon: the incidence is estimated at approximately 12% for PPD (Shorey et al., 2018) and 15–18% (Dennis et al., 2017) for PPA. PPD and PPA can precipitate early breastfeeding cessation (Dennis & McQueen, 2007; Figueiredo et al., 2014; Stuebe et al., 2014; Yusuff et al., 2015); likewise, those struggling with or who dislike breastfeeding are more likely to suffer from PPD (Chaput et al., 2016; Dennis & McQueen, 2007; Watkins et al., 2011). Additional risk factors for PPD include sociocultural factors such as support, socioeconomic status, racism, labor and delivery mode and complications, sleep disturbances, body image, and a variety of hormonal/biochemical factors (Field, 2017).

Among the *BWN* study participants, of the 1,603 participants who answered Q162: *Did or do you suffer from postpartum depression (PPD) and/or postpartum anxiety (PPA)?*, only 858 (53.5%) answered "no." An additional 255 (15.9%) participants were "not sure" and almost one-third (30.6%; $n = 490$) of participants affirmatively reported experiencing postpartum depression and/or anxiety (Table 3). This rate is approximately double the estimated incidence within the population; including those who were not sure (and therefore likely felt symptoms akin to PPD/PPA) results in a rate three times that of the general postpartum population.

Table 3. Q162: Did or do you suffer from postpartum depression (PPD) and/or postpartum anxiety (PPA)? (n = 1,603)

Answer	n	%
Yes[a]	*490*	*30.6*
Currently	226	14.1
In the past	264	16.5
I'm not sure	255	15.9
No	858	53.5

[a] Sum of *In the past* and *Currently*

Participants who experienced a greater number of labor and delivery interventions did not report PPD/PPA more often, but shorter pregnancy length was significantly associated with higher proportions of PPD/PPA (Table 4). Parity was not associated with reports of PPD/PPA.

Patterns in reports of PPD/PPA presented in expected ways regarding participant age, education, income, and receipt of postpartum education—i.e., older age, higher education level, and more income and postpartum education were associated with fewer reports of PPD/PPA (Table 4). Conversely, POC were less likely to answer "yes" to having PPD/PPA (33.5%; 63/188 vs. 36.8%; 422/1,148 White non-Hispanics), although this difference was not significant, χ^2 (df = 1, n = 1,336) = 0.737, p = .390. There were, however, significantly more "I'm not sure" responses from POC (21.0%; 50/238 vs. 15.0%; 202/1,350 White non-Hispanics), χ^2 (df = 1, n = 1,558) = 5.539, p = .019.

When asked, on a scale of 0 ("not at all") to 100 ("I believe it was the only reason I got PPD/PPA), to assess to what extent participants felt that EPing contributed to their PPD/PPA, the mean was 41.7 (SD = 32.4; median = 40, mode = 0; range = 0 – 100; n =

465). In analyzing the content of responses to Q170: *If you're willing, please share more details about your experience of PPD and/or PPA here.*, only a few participants attributed their PPD/PPA to EPing. Instead, participants wrote that EPing had nothing to do with their PPD/PPA, that lactation/postpartum hormones in general were responsible, and/or EPing made their PPD/PPA better because it alleviated the negative emotions associated with not fulfilling their desire to nurse.

Table 4. Characteristics significantly associated with reporting postpartum depression and/or anxiety

Characteristics (*n*)	PPD/PPA *n* (%)	No PPD/PPA *n* (%)	Not sure *n* (%)	Test statistic[a]
Year of birth (1,587)**	483 (30.4) *M* = 1986.1 *SD* = 5.0	850 (53.6) *M* = 1985.3 *SD* = 4.6	254 (16.0) *M* = 1986.0 *SD* = 4.5	Mean age is less for those reporting PPD/PPA, $t(1,084) = -2.906$, $p = .004$
Pregnancy length[b] (1,304) (weeks)	382 (29.3) *M* = 38.2 *SD* = 3.2	704 (54.0) *M* = 38.6 *SD* = 2.5	218 (16.7) *M* = 38.7 *SD* = 2.7	Mean pregnancy length is shorter for those reporting PPD/PPA, $t(1,084) = 2.285$, $p = .023$
Education (1,599)***				As education increases, reports of PPD/PPA decrease, Cochran-Armitage test of trend: $p < .001$
≤ High school or equivalent (87)	32 (36.8)	45 (51.7)	10 (11.5)	
Some college/university or Associate degree (435)	159 (36.6)	206 (47.4)	70 (16.1)	
Bachelor's degree, trade qualification, some graduate education (611)	179 (29.3)	336 (55.0)	96 (15.7)	
≥ Master's degree (466)	120 (25.8)	268 (57.5)	78 (16.7)	

Characteristics (*n*)	PPD/PPA *n* (%)	No PPD/PPA *n* (%)	Not sure *n* (%)	Test statistic[a]
Household income (U.S. $) (1,507)***				As income level increases, reports of PPD/PPA decrease, Cochran-Armitage test of trend: $p < .001$ Although the proportion of those "not sure" decreased as income increased, this correlation fell just short of statistical significance, $U = 139{,}580$, $z = –1.893$, $p = .058$
< 10,000 (23)	7 (30.4)	6 (26.1)	10 (43.5)	
10,000–29,999 (91)	36 (39.6)	34 (37.4)	21 (23.1)	
30,000–49,999 (181)	65 (35.9)	89 (49.2)	27 (14.9)	
50,000–69,999 (267)	90 (33.7)	135 (50.6)	42 (15.47)	
70,000–99,999 (395)	121 (30.6)	214 (54.2)	60 (15.2)	
100,000–149,999 (326)	93 (28.5)	191 (58.6)	42 (12.9)	
≥ 150,000 (224)	55 (24.6)	133 (59.4)	36 (16.1)	
Received postpartum education (1,591)*				

Characteristics (*n*)	PPD/PPA *n* (%)	No PPD/PPA *n* (%)	Not sure *n* (%)	Test statistic[a]
Yes (1,371)	408 (29.8)	752 (54.9)	211 (15.4)	A smaller proportion of participants who received postpartum reported having PPD/PPA, χ^2 (*df* = 1, *n* = 1,338) = 4.990, *p* = .025
No (220)	78 (35.5)	100 (45.5)	42 (19.1)	
Postpartum education was from a HCP and/or LC (1,603)*				A smaller proportion of participants who received postpartum education from a HCP and/or LCs reported having PPD/PPA, χ^2 (*df* = 1, *n* = 1,348) = 3.928, *p* = .047
Yes	394 (29.8)	726 (54.8)	204 (15.4)	
No	96 (34.4)	132 (47.3)	51 (18.3)	

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

[a] Test statistic excludes "not sure" responses.

[b] This includes only those who had one EPing journey—because the question about PPD/PPA was only asked generally, and not per EPing journey, it is only possible to connect pregnancy length and PPD/PPA when a participant only reported one EPing journey

4.11. Discussion

The complex affective experiences of EPers are, of course, felt by the individuals themselves; however, that does not preclude the influence of a variety of socioecological factors. *BWN* study participants had a specific expectation of what their identity (intrapersonal) and world would (like microsystem) look like after giving birth—for most, this was as nursing breastfeeders with all the health, logistical, bonding, and affective benefits they imagined. Cognitive stress theories of grief relate "grief severity to the degree that a loss violates assumptive world views (Stroebe & Schut, 1999), with extensions emphasizing the role of meaning making (Harvey & Miller, 1998; Neimeyer et al., 2006) or identity continuity (Bonanno et al., 2001) in determining grief severity" (Papa et al., 2014, p. 136). The socioecological factors that influenced this world view and expected identity—in other words, what influenced participants to want to nurse—have already been discussed in Chapter 3.

An individual's world view and expected identity also influence their feelings of failure, inadequacy, and rejection. The "good mother" ideology—created by interactions between each socioecological system, but heavily influenced by prevailing cultural norms and social values (inner macrosystem)—sets up a "model of motherhood that asks women to give fully of themselves at all times, physically, emotionally, psychologically and intellectually" (Sutherland, 2010, p. 313). It is no wonder that participants felt failure and inadequacy when they could not live up to this impossible standard through successful nursing.

Failure, inadequacy, and anger then bred feelings of guilt and shame. Since guilt and shame are far less commonly described by those identifying as fathers—the so-called

"guilt gap" (Hays, 1996)—and many participants struggled with being made to feel shamed as a result of EPing, they felt alone and isolated. Guilt and shame are often related to an ideology of "good mothering" (Sutherland, 2010), an element of which is nursing. Those who do not nurse—even if they still feed human milk—may feel (or be made to feel) that they are contravening cultural definitions (inner macrosystem) of good mothering. Before finding those in their microsystem, mesosystem, and exosystem that could empathize with their affective experiences, participants did not have others to "buffer feelings of guilt and shame by dodging cultural definitions and constructing new ones, thus maintaining the 'good mother' label" (Sutherland, 2010, p. 317, citing Garey, 1995). Once participants found those for whom EPing was part of their definition of "good mothering," their EPing success became a point of pride and accomplishment. An interesting area of future research would be to examine the affective experiences of those who EP but do not become part of a social group for whom EPing is the norm. (Garey, 1995)

Positive feelings associated with EPing are important findings: despite experiencing grief, anger, failure, and guilt, participants demonstrated resilience, optimism, and ultimately, pride. Participants recognized the relief that came from a more predictable way of feeding the most important person in their microsystem (their child) and, after weaning, the freedom that gave them more time to interact with their child, partners, family, and friends (microsystem). That those in their microsystem were also able to bond with their child through feeding was cherished by many participants.

However, the proportion of participants reporting PPD/PPA was far higher than general postpartum population rates. While the *BWN* study was not designed to, nor was

it able to, identify cause and effect for PPD in its participants, a number of factors might be responsible for this high prevalence. For example, most participants did not EP just because they wanted to—they did so because they had breastfeeding difficulties (see Chapter 3), they lacked information about EPing (Chapter 5), and/or many had insufficient or poor experiences of receiving breastfeeding support from LCs and others (see Chapter 6). As examined in their respective chapters, a number of socioecological factors affect these findings. Since increased guilt is responsible for increased depression (e.g., L. E. O'Connor et al., 2002), this could be another contributing factor; the cultural norms and social values (inner macrosystem), mass media (inner macrosystem), institutions (exosystem), and those within individuals' primary groups (microsystem) that influence the "good mother" ideology all perpetuate this guilt. Lastly, it is concerning that POC participants were significantly more likely to report "I'm not sure" regarding whether they had PPD/PPA. This perhaps reflects the ongoing problem that "Black and Hispanic depressed mothers [are] more likely to experience multiple adversities and less likely to receive services than white depressed mothers" (Ertel et al., 2011, p. 1609). The actors at every level of the sociological system must work together to overcome these disparities.

Lastly, participants felt anger and resentment towards those they perceived as not supporting them in their attempts to nurse, often LCs and HCPs, whose ability to provide adequate support is often influenced by the institutions, culture, and policy and laws within which they practice. One important type of this support that participants overwhelmingly reported would have made their EPing journeys easier was that of

information. *BWN* study participants' information experiences are addressed in the next chapter.

Chapter 5. *"I needed earlier and better information, especially from lactation consultants"*
Domain 3: Exclusive Pumpers' Information Experience

Information was a thread that was universal throughout *BWN* study participants' responses, typically characterized by needing more information about EPing earlier in their EPing journeys. Although most participants interacted with breastfeeding experts—namely, LCs—they were left with information gaps they needed to fill, which required them to discover the correct terminology before being able to successfully initiate active information seeking. Information needs, seeking, and use, collectively, are known as information behavior. In his widely cited 2000 paper, Wilson defines information behavior as:

> The totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example, watching TV advertisements, without any intention to act on the information given. (T. D. Wilson, 2000, p. 49)

Information experience expands the analysis of information behavior by also considering information sources and their quality and the effect information has (or not) on lived experience, while, at the same time, integrating individuals' "thoughts, feelings, senses, and actions; as well as their social and cultural influences" (C. Bruce et al., 2014b, p. 316). An examination of information that considers the rich and intricate experiences of *BWN* study participants holistically is vital, for reasons Bruce et al. (2014a) explain:

> Attending to information experience opens windows onto people in their informational worlds, revealing their concerns, needs and interests. Understanding people's information experience has importance for developing or enhancing environments, systems and services that are responsive to and supportive of that experience. (p. 11)

Investigating the information experiences of EPers is essential to optimally enhance environments, systems, and services for this population, as well as to create evidence-based change to breastfeeding policy, education, and practice more generally.

I do not specifically define the concept of information, but rather believe that we know it when we see it (for more, see Case & Given, 2016). Experience follows von Glasersfeld and Ackermann's (2011) *Erlebnis*, as characterized by Savolainen (2019): "a person's experience as lived through: the undergoing of some noticeable event, as apprehended through the senses or mind, affecting him or her here and now" (p. 9). Given that the *BWN* study used a retrospective design, experiences reported by respondents will have been noticeable enough to be memorable. Information experience, therefore, can be characterized as an information event and/or behavior plus the outcome of that event/behavior.

This chapter focuses on information events and/or behaviors and the outcomes of those events/behaviors: collectively, information experience. Guided by information science literature, I identified the information themes of needs, sources, seeking, and outcomes throughout participants' responses. Within each theme, the existing breastfeeding information-related literature is summarized before considering how it relates to EPing and the experiences of study participants. Three key information topics—first hearing the term "exclusive pumping," breastfeeding education, and EPing information specifically—are also addressed within each theme. This chapter ends with a discussion of participants' information experiences, analyzed through a sociological lens.

5.1. *"I needed to know exclusive pumping was a 'thing' before I wound up doing it. And I needed clear information about how to do it."* Information Needs

In *BWN* study participants' responses to *What would have made EPing* ***better?,*** the most prevalent response was "more information." However, writing about what information they needed was a frequent subject of participants' open-ended responses; these will be addressed in this section after first summarizing breastfeeding information needs in general. Many *BWN* study participants also said that they needed information earlier: this is address in the context of when participants first heard the term "exclusive pumping." Participants' unanswered information needs/questions are explored before barriers specifically relating to participants' information needs are addressed at the end of this section.

5.1.1. Breastfeeding Information Needs

Breastfeeding has been culturally constructed as "'natural' and trouble-free" (I. Williamson et al., 2012, p. 434), which could be interpreted to mean that additional information is not required. However, it seems more likely that "a person becomes aware of a lack of knowledge or understanding, making uncertainty and apprehension common" (Kuhlthau, 2005, pp. 230–231), thus feeling that they do not have enough information to successfully achieve their goal of breastfeeding. In anticipation of breastfeeding, they become aware of a breastfeeding information need. Once embarked on their breastfeeding journey "information needs may emerge (and be resolved) in the situated, embodied interaction with one's environment" (Lueg, 2015, p. 2706), including by learning from one's own body and from observing those around them (St. Jean et al., 2018).

Unfortunately, formal breastfeeding information is often conflated with breastfeeding promotion, despite scores of studies demonstrating that breastfeeding information should be clear, concise, consistent, and correct (e.g., Brown, 2016; Clifford & McIntyre, 2008; Graffy & Taylor, 2005; Smale et al., 2006; Spear, 2004; Spiro, 2016; I. Williamson et al., 2012). For example, participants in Graffy and Taylor's (2005) qualitative study of 730 mothers expressed that practical advice about breastfeeding was the most helpful information and also reported that conflicting breastfeeding advice was a "significant" problem. They categorized other types of information into most and least helpful, as illustrated in Figure 13.

Figure 13. Examples of the most and least helpful breastfeeding information and advice (Graffy & Taylor, 2005, p. 182)

What Women Found Most Helpful	*What Women Found Least Helpful*
Effective advice for specific concerns (positioning, timing and duration of feeds, engorgement, expressing, treatments for sore nipples)	Advice that did not fit with their preferences or experiences (timing and duration of feeds, supplementing or changing to formula, positioning, treatments for problems such as sore nipples or colic)
Encouragement to keep going	Not enough time or help with feeding
Reassurance that what they were going through was normal	Not feeling listened to
Knowing the benefits of breastfeeding	Pressure to breastfeed
Encouragement to look after themselves, rest, relax, eat and drink well	Being made to feel guilty for bottle-feeding
"Permission" to give bottle-feeds if they wished	Negative attitudes toward breastfeeding
Being able to ask questions about breastfeeding	Conflicting advice

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While the majority of breastfeeding information and support focuses on the benefits of breastfeeding (i.e., breastfeeding promotion), Brown (2016) found a need for breastfeeding information that stressed benefits other than infant health (e.g., convenience, cost, and closeness), employed less of an all-or-nothing approach, and included information about both the positive and negative aspects of breastfeeding.

Similarly, Spear (2004) used a case study approach to highlight the importance of receiving accurate information about breastfeeding initiation prior to birth, including what could go wrong or what alternative methods might need to be employed. She stressed that "explanation about alternative feeding methods for infants who cannot be breastfed initially, familiarization with use of the breast pump, and hand expression of milk prior to delivery may be helpful" (p. 774), not only practically, but also to prevent idealized and unrealistic expectations of the breastfeeding experience (see also, Fox et al., 2015; Mozingo et al., 2000). Relatedly, the mothers studied by Graffy and Taylor (2005) felt that the information they were given prenatally did not reflect the "realities of breastfeeding," such as "discomfort and the time they might spend feeding, and … common feeding problems" (p. 181).

Specific topics that aspiring or actual breastfeeders wanted information about included how uncomfortable nursing could be, how much time they might spend feeding, and how to deal with common problems (Graffy & Taylor, 2005). Similarly, Dietrich Leurer and Misskey (2015) found that their 191 Canadian breastfeeding participants wanted information about "breastfeeding frequency and duration, milk supply, latch and feedings positions, and nipple care … consistent with other research showing these are common breastfeeding challenges" (p. 7). They also found that a significant number of breastfeeding information needs were not being met, similar to past findings (Cross-Barnet et al., 2012; McLeod et al., 2002; Taveras et al., 2003)

5.1.2. Exclusive Pumpers' Information Needs

Dietrich Leurer and Misskey (2015) identified milk expression as an information gap among the breastfeeders they studied, detailing specific information needs as

pumping, milk storage, and maintenance of supply with milk expression. In their analysis of milk expression and breast pumping posts from 2014 in an online forum, Yamada et al. (2016) found that four main themes (i.e., information needs) emerged from the posts: "choosing and purchasing pumps; storing and preparing pumped human milk; strategies for and difficulties with pumping and integrating pumping into work; [and] stopping pumping" (p. 4). In Dietrich Leurer et al.'s (2019) study of *non*-exclusive pumpers, "participants sought timely, practical, and factual information, although psychological support was also important" (p. 6). In contrast to Yamada et al.'s (2016) findings, participants wanted information about how to pump, frequency and duration of pumping, milk storage, pumps and accessories, and milk supply.

In their open-ended responses to Q138: *What would have made your experience of EPing* ***better?***, the most prevalent response was "more and/or better information." Participants often did not specify particular topics of information needs in these open-ended responses. However, in response to Q113: *When you decided to EP/found yourself EPing, how important was information about the following topics?*, participants rated the importance of information about a variety of EPing topics on a Likert-type scale, thus demonstrating what was the most and least important EPing information to them. Table 5 provides the mean score, calculated from assigning numerical values to each response option (see table notes), for each EPing information topic. Reflecting Dietrich Leurer et al. (2019), participants most wanted information on the frequency and duration of pumping and milk supply.

Table 5. Responses to Q113: *When you decided to EP/found yourself EPing, how important was information about the following topics?*, mean "importance score," and which groups this information was more important to (*n* = 1,820)

Category	Mean importance score	Group(s) this information was more important to
How often to pump	1.9	• People of color*
How to maintain supply	1.7	• Participants who EPed for their second child(ren) or later* • Participants with lower educational attainment*
How long each pumping session should be	1.7	• Participants with higher household income***
How to avoid discomfort/increase comfort	1.7	
Flange[a] sizing	1.7	
Breast pump operation/settings	1.6	
How to store/heat up milk	1.6	• People of color** • Participants with lower educational attainment*** • Participants with lower household incomes**
How to increase supply	1.6	• People of color*
How much to feed	1.2	• Participants who EPed for their first child(ren)**
How often to feed	1.2	• Participants who EPed for their first child(ren)**
How much milk to pump	1.2	
How to pump while out of the house	1.1	• People of color* • Participants with lower household incomes*
How to look after child/children while pumping	0.9	• People of color*

Category	Mean importance score	Group(s) this information was more important to
		• Participants with lower educational attainment* • Participants with lower household incomes**
Choice of feeding bottles/nipples	0.6	• People of color*
How to explain exclusive pumping to others	0.3	• Participants with lower educational attainment*** • Participants with lower household incomes***
How to wean off the breast pump	0.2	• Participants with lower educational attainment**
How to supplement with formula	0.1	• Participants who EPed for their first child(ren)** • People of color***
How to get back to the breast	0.1	• Participants who EPed for their second child(ren) or later** • People of color***
How to decrease supply	–0.2	• Participants with lower educational attainment*** • Participants with lower household incomes**

*$p < .05$; **$p < .01$; ***$p < .001$

Notes. Likert-type answers were coded as follows: Not at all important = –2; Somewhat not important = –1; Neutral = 0; Somewhat important = 1; Very important = 2. These numerical codes were used to calculate the "mean importance score." Groups this information was more important to: Mann-Whitney *U* tests (when participants belonged to only two groups) and Kruskal-Wallis *H* tests (when participants belonged to three or more groups) revealed scores reported by these groups were significantly higher or lower than those not in these groups (for these statistical tests, scores were renumbered on a scale of 1–5).

[a] This is the funnel-shaped shield that fits over the nipple and areola.

Since most participants' EPing journeys (84.5%; 1,996/2,362) started within the first month of their child(ren)'s life, how to wean or decrease supply is, unsurprisingly, low on the list of their informational priorities. Interestingly, despite many parents having

to feed formula, the importance of this information was also low—perhaps because participants had already received formula-feeding knowledge before starting to EP.

How to "get back to the breast"—that is, establish a nursing relationship—was also a low priority information need. In addition to participants having been recruited from online support groups, most of which did not permit discussions of latching (EPers who wanted this information would likely seek out specific back-to-the-breast groups), their open-ended responses also illuminated why this information was a low priority. The mostly-unwanted rhetoric of getting baby back to the breast is one EPers hear repeatedly from multiple sources:

> *Every tom, dick and harry on the planet felt that … get[ting] back to nursing was the only solution. Well you know what they say about opinions.... I basically felt they weren't fully modernized to the newer way of … EPing. And felt that this stemmed from a lack of understanding and education/exposure to the situation. (R411)*

> *I would say that a huge majority of available information is written with the underlying intent of getting women to return to direct nursing or in a way that is meant to make the reader feel like exclusive pumping is not ideal. (R139)*

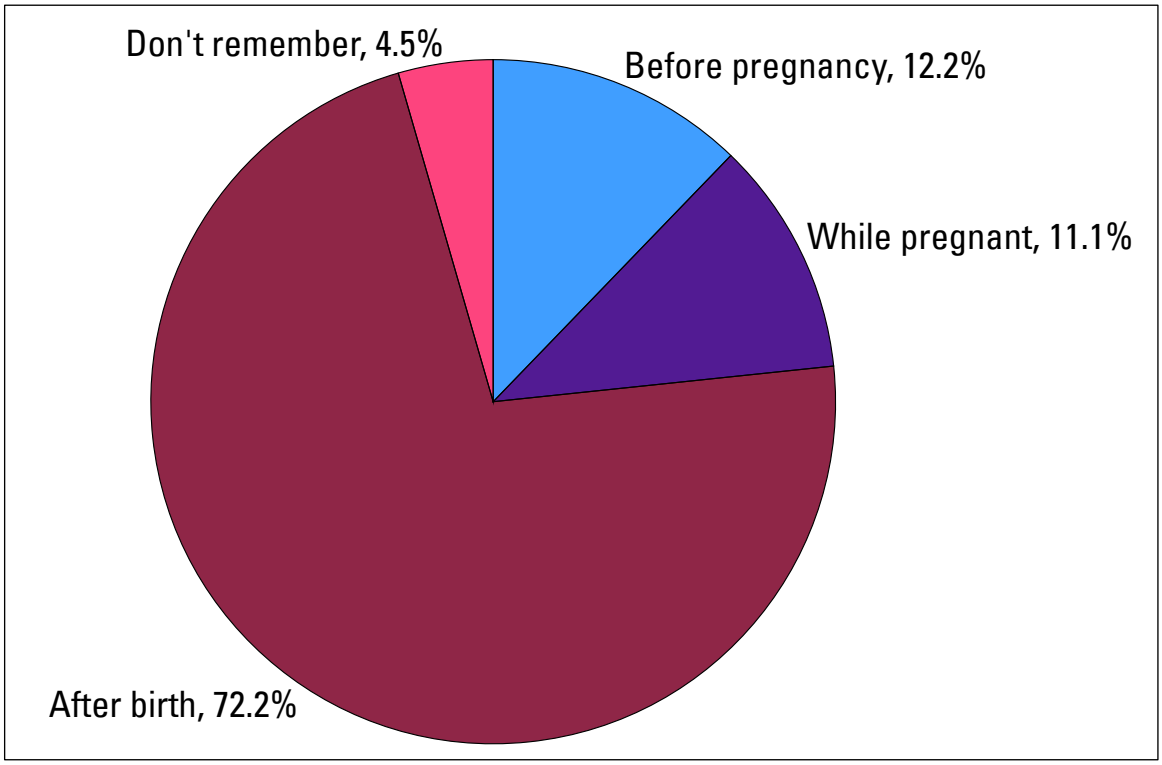
> *Everything was very much focused on pumping to establish or increase supply and was assumed to be only temporary with every effort made to go back to the breast. Exclusive pumping long term was not considered to be a legitimate option akin to direct latch feeding or formula feeding. (R827)*

5.1.3. Timing of First Hearing the Term "Exclusive Pumping"

After more and/or better information in general, the second most prevalent theme among participants' responses to Q138: *What would have made your experience of EPing* ***better?*** was that of finding needed information (and support) earlier. Of those

participants who EPed for their first child,[13] only 23.3% (386/1,654) had heard of the term "exclusive pumping" prenatally (Figure 14).

Figure 14. Responses to Q102: *When did you first hear the term "exclusive pumping"?* (based on responses of participants who exclusively pumped for their first-born child(ren)) (*n* = 1,654)



5.1.4. Unanswered Information Needs

Although how to wean off pumping was not a highly important information need at the beginning of participants' EPing journeys, when asked Q117: *What unanswered questions do you still have about EPing? Where have you looked for answers?*, many participants answered that they still needed this information. Some participants remarked

[13] This, and other questions that refer to the timing of information behavior by asking "before/after the birth of your child," were worded so that it was not possible to tell which child they were referring to if participants had given birth to more than once. Therefore, these participants must be excluded. This and subsequent analyses pertaining to the timing of information only include responses from participants who EPed for their first-born child(ren).

that they are not at that stage in their EPing journey and therefore did not need the information yet: they were instead aware of a future information need. Participants described other future information needs as well, for example, introducing complementary foods ("solids") to their child(ren), breast health problems they have yet to experience (e.g., clogged ducts, mastitis), and how to pump at work or when traveling.

Unanswered questions often included those for which there may be a lack of empirical data to answer (see below). An especially frequent response was whether milk changes in response to age, environment, and so on, as it does when nursing. Some examples of unanswered questions for which objective data may be missing include:

> *Is the milk really the same as from nursing? (Meaning does it change just as much to what baby needs). (R81)*
>
> *I have always looked for the real answer of whether or not the milk successfully adjusts to the baby's needs, even though there is no saliva at the breast when feeding. I have read articles and threads but they only appear to contain opinions and not facts. (R138)*
>
> *To what extent do my daughter and I still have a two way immune connection, despite the fact that she doesn't make contact with my nipples? Can I still produce antibodies for her illnesses if I'm not sick? (R702)*
>
> *How do EP babies compare to nursed babies? (R856)*
>
> *I have questions about the ability of breast pumps to withstand the excessive use of an exclusive pumper, and I haven't seen this addressed anywhere. I have questions about the effects of exclusively pumping on my breasts, both medically and cosmetically. (R946)*
>
> *None that I actually need answers to, mostly biochemical musings. Like I'd love to see an hourly analysis of human growth hormone and IGF-1 and melatonin levels around a 24 hour cycle, once a week for a year. Stuff like that. (R1171)*

Other unanswered questions may have complex answers, spanning multiple disciplines. For example:

> *How has pump design not progressed in so many years? Why is pumping seen as dirty while direct nursing is normalized? (R398)*

Why is it [EPing] not more popular in hospitals? Why isn't it a viable option? (R491)

Why is EPing (or pumping in general) not included in breastfeeding classes or a topic for parents to be? EPing is still breastfed, so this should be at least basics in conversation. (R1793)

Why does it take me so much longer to empty my breast (my first morning pump takes 1.5 hours and the other 2 pumps take 1 hour each) when some people can empty their breasts in 10-15 minutes? Why do some people make more milk than me even if I do everything that they do? (R1610)

Participants often still had remaining questions about practical and/or logistical aspects of EPing. For example, how much to feed their child was a common question:

How much should my baby really need? I find a lot of resources that tell you how much formula a baby should eat (approximately) and resources that tell you how much breast milk an EBF [exclusively breastfed] baby needs, but no one really talks about how much expressed milk AND formula should be expected if you are doing both. (R943)

Some participants were confused about the length of time milk can be stored and what potential effects this might have:

How is frozen breast milk different then freshly expressed milk? How long can breast milk be left out at room temperature, in the refrigerator, in the freezer, and in a deep freezer? I have looked online and in the Facebook groups I am a member of and get mixed answers. (R836)

How beneficial is the breastmilk after a few days as compared to fresh? What about frozen milk frozen months ago for my baby now? Is it beneficial? (R1134)

If breastmilk changes as your baby ages, is it not as healthy/good for baby to give them milk that was frozen weeks/months ago? Online research states that milk gets more calorically dense as baby ages - meaning they do not need more ounces of milk the bigger they get - at some point the number of ounces they drink plateaus and they will be satiated with the same amount of ounces they had say, a month ago. Essentially, this means my 7 month old son would not be satiated with the milk I froze when he was 3 months old. (R1437)

Others wanted more information about both increasing and decreasing their supply:

How can I increase supply?! Supplements don't work. I'm hydrated. My breast tissue is normal according to my doctor. I asked because I am frustrated with undersupply. Power pumping doesn't seem to help. I feel like I missed my window

of opportunity for full milk supply. I've asked women I know, asked in groups, and Googled, but can't find an answer. (R1244)

How do you slow your supply down instead of maintaining the amount of milk that first comes in? I'm an over producer and I couldn't slow down my production. If I tried to pump less or go longer I would develop mastitis. It was an endless battle. (R612)

Many participants also responded to this question by commenting that they do not currently have any questions, but were sure more would arise. Often participants expressed that they always have questions they can ask about EPing:

I honestly come up with new things I want to learn about the process every day! (R2083)

You know, I come up with questions all the time. Why do my nipples still hurt? They look purple during pumping now wtf?!? And so on! (R289)

I think there is always something new to learn about EP. It isn't black and white. Lots of grey areas! … It's all a learning experience. Takes time. (R1005)

Lastly, some participants knew that they did not know everything, but were unsure what additional information they needed:

I feel like I don't know enough - that there are things that I am missing. I don't know what I don't know. (R822)

This is what Library and Information Scientists call a "knowledge gap." You don't know what it is that you don't know. (R1065)

5.1.5. Barriers to Fulfilling Information Needs

5.1.5.1. Lack of Empirical Data

As demonstrated throughout this dissertation, there is a lack of empirical data about most aspects of EPing. Several participants commented on this lack. For example:

I have learned about EPing primarily from my own research. In everything I've read, I've probably found 3 helpful websites/blog posts and a handful of helpful research articles. Most of the information available is not helpful at all: the focus is either bottle feeding or breastfeeding, with exclusive pumping lumped into one or the other. I have met many women who have also EPed, and most gave up early, so weren't helpful either. Reading articles about the biology of

> *breastfeeding (unrelated to pumping) have been the most helpful, as I've been able to extrapolate the information I need. (R1468)*
>
> *There doesn't seem to be a lot of research or empirical data on increasing your supply while EPing. Much of it appears to be anecdotal at best or apply solely to those that only pump for supplemental feeding purposes. (R878)*
>
> *There needs to be more research into it scientifically. I'm sick of guessing. There needs to be more information and presented as an option. (R202)*

This lack of data is problematic, especially for evidence-based practitioners such as HCPs and LCs who may find it challenging to make recommendations based on anecdotal evidence. Consequently, HCPs and LCs may make little-to-no recommendations or share only scant information about EPing, leaving breastfeeders who need this information support bereft.

5.1.5.2. Conflicting Information

Given the lack of empirical data about EPing, it is no surprise that participants received conflicting information. Conflicting information has been studied in the context of information behavior in general, as well as with regard to health and breastfeeding information. Carpenter et al. (2016) warned of the growing problem of conflicting health information, particularly when "mass media have increased the visibility of such conflicting and often politically charged controversial health information," especially in the context of "a growing professional emphasis on involving individuals in health-care decisions" (p. 1173). Vis-à-vis breastfeeding, this problem creates a barrier to successful breastfeeding and may lead to trust issues, deference to the source people deem (potentially incorrectly) most credible, and negative affective outcomes (Carpenter et al., 2016). Both Rajan (1993) and Graffy and Taylor (2005) specifically noted the lack of confidence in breastfeeding that can result from receiving conflicting advice. Similarly,

mothers in Fox et al.'s (2015) study reported that breastfeeding "advice was often inadequate, contradictory and undermined their confidence in their feeding abilities" (p. 152). Other consequences of conflicting health (including breastfeeding) information include increased anxiety, decreased ability to assess the reliability of information sources, and reduced medication adherence (Carpenter et al., 2016).

Many study participants' unanswered questions pertained to issues for which they had received conflicting answers. For example:

> *How long can breast milk be left out at room temperature, in the refrigerator, in the freezer, and in a deep freezer? I have looked online and in the Facebook groups I am a member of and get mixed answers. (R836)*

Some participants struggled with specific sources that conflicted with one another:

> *Been trying to find the information [about pumping schedules] on online forums but there seems to be conflicting reports so it's very confusing. (R1847)*

> *As I was having difficulty with latching (due to conflicting recommendations regarding positioning from different hospital staff) we decided to supplement to ensure the child was fed. (R446)*

Encountering misinformation, either actual or perceived, was also a barrier to information seeking for some participants:

> *Misinformation that some people and providers have on exclusively pumping [made EPing worse] (R222)*

> *I learned through trial and error and from sources on the Internet. Some of the answers were helpful. Others were hard to find accurate info. The sources of info could be rife with misinformation… their reliability could and should be called in to question. You really needed to check the validity of the info received, and that was hard in a lot of cases. (R448)*

> *This has been the loneliest journey of my life with so much misinformation, pain and trauma. I found very little support and very few answers despite the knowledge of the team behind me. (R1503)*

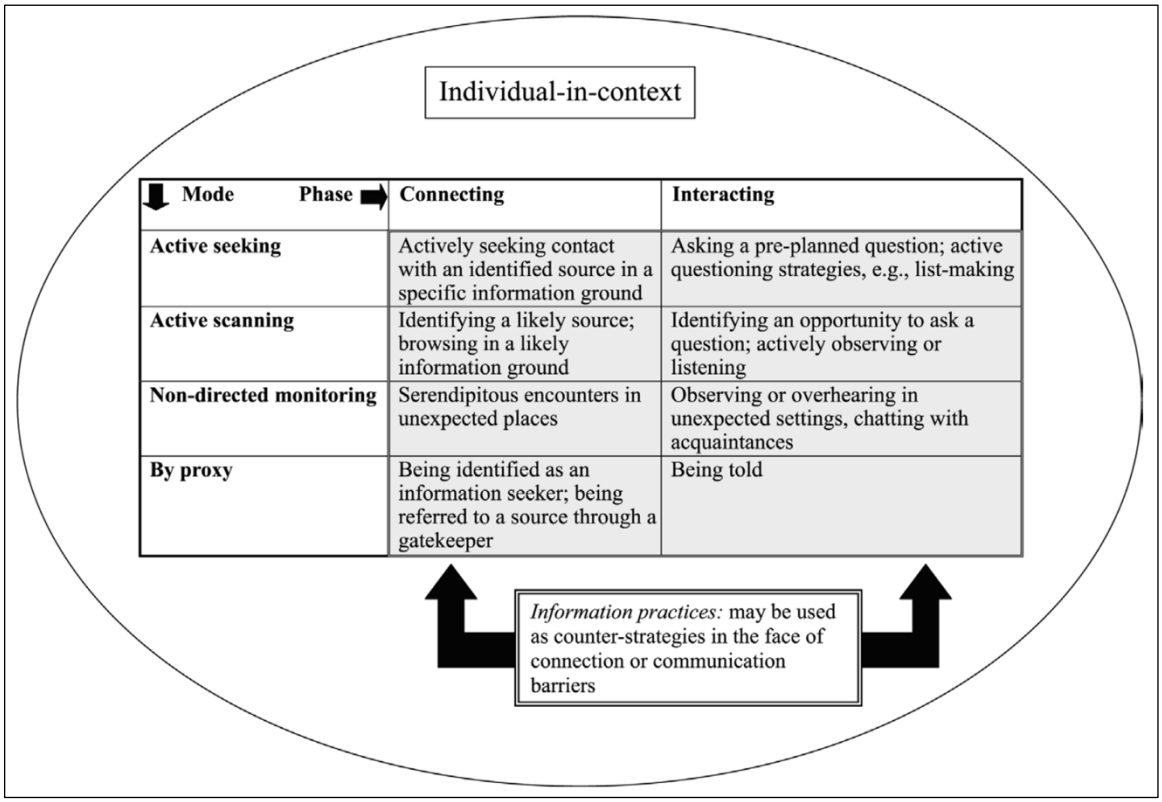
5.2. *"I sought out breastfeeding information before and after I gave birth, but exclusive pumping wasn't mentioned. I stumbled across it and then I knew what to search for."*
Information Seeking

Information seeking usually, though not always, follows having an information need, whether articulated as such or not, and can be defined as "the purposive seeking for information as a consequence of a need to satisfy some goal" (T. D. Wilson, 2000, p. 49). However, information is also gathered through serendipitous discovery (Erdelez et al., 2016). The antitheses of information seeking include information avoidance and blunting (avoiding *and* seeking distraction) (Case et al., 2005; Rood et al., 2015). This section reviews McKenzie's (2003) model of information seeking behaviors before describing the proportion and type of *BWN* study participants who sought prenatal and postpartum breastfeeding education. Barriers to information seeking, such as incognizance of the correct terminology and being judged by others, are then addressed.

Based on her study of Canadian women pregnant with twins, McKenzie (2003) developed the *information practices* (Savolainen, 2009, p. 1785) model—a two-dimensional model of everyday life information seeking behavior with four different modes of information seeking behavior: *active seeking*, *active scanning*, *non-directed monitoring*, and *obtaining information by proxy*. When individuals "connect" and "interact" with information sources, descriptions of what activities take place within each mode of information seeking behavior are illustrated in Figure 15. This model of information seeking is particularly well-suited to breastfeeding and EPing information seeking, given that it was derived from a study of pregnant people's everyday-life information seeking—that is, "the ways in which people access and use various

information sources to meet information needs in areas such as health, consumption, and leisure" (Savolainen, 2009, p. 1780).

Figure 15. Two-dimensional model of the everyday-life information seeking behaviors described by Canadian women pregnant with twins (McKenzie, 2003, p. 26)



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Where possible, the following analysis applies McKenzie's (2003) two-dimensional model to the information behavior of *BWN* study participants. However, it should be noted that the *BWN* study was not designed to identify specific information seeking behaviors in the way defined by McKenzie (2003): as demonstrated by other studies of everyday life information seeking (e.g., Erdelez, 1997; McKenzie, 2003; K. Williamson, 1998; D. H. Zimmerman & Wieder, 1977), retrospective in-depth, in-person interviews and/or diary keeping are more appropriate methodologies to collect these

kinds of data. Nevertheless, wherever possible in the paragraphs that follow, participants' information seeking behavior is connected to McKenzie's (2003) model.

Regarding seeking EPing information specifically, participants' answers to open-ended responses suggested non-directed monitoring. For some participants, this led to serendipitous information encounters:

> *I'm always finding out stuff, unexpectedly. (R269)*
>
> *So many different questions, I have asked the [online support] group or am watching the group [to get the answers]. (R611)*

Other participants described ongoing active information seeking. For example:

> *I learned about EPing though an internet search. … I am constantly googling and searching for information, tips, and just common experiences of other EPers. (R730)*

Continuous nonlinear monitoring of or active seeking for information led to serendipitous discoveries of relevant and useful information, aligning with Bruce's (2005) *personal anticipated information need* theory. That is, by monitoring questions and discussions in online support groups, *BWN* study participants "acknowledge the usefulness of the information but delay the information use to another time" (H. Bruce, 2005, sec. Proposition 1). One participant aptly summed this up:

> *I don't have any questions today but you never know what will come up tomorrow that will trigger some insight from the EP tribe. (R376)*

5.2.1. Breastfeeding Education

Participants practiced active seeking of general breastfeeding information both before and after giving birth. Participants were asked about this breastfeeding education through two survey questions: Q104: *Did you receive breastfeeding education* ***before the birth*** *of your child/children?* and Q108: *Did you receive any breastfeeding*

*education **after the birth** of your child/children?*. Unfortunately, the wording of these questions may have led some participants to respond "no" because they may not have felt that they "received education," despite the subsequent questions including options for self-directed information seeking. For example, doing independent research and reading may not be thought of as "education" or as being "received." Therefore, it is unlikely that the number of participants that indicated they had received prenatal or postpartum education is a true reflection of the proportion of participants who actually sought information before and after giving birth. Nevertheless, it is worth noting that, of the 1,653 participants who had EPed for their first-born child who answered question Q104, 1,045 (63.2%) indicated that they had received breastfeeding education *before* the birth of their child(ren). Of the 1,640 participants who answered Q108, 1,395 (85.1%) indicated that they had received breastfeeding education *after* the birth of their child(ren).

Education level was associated with receiving prenatal and postpartum education. Cochran-Armitage tests of trend shows a statistically significant linear trend: as education level increased, so did the proportion of participants who had received prenatal or postpartum education, $p < .001$. Likewise, there was also a statistically significant linear trend between income level and prenatal and postpartum education, $p < .001$. As listed in Table 6, the degree of difference in the percentage of participants receiving postpartum education between the lowest (68.2%; 15/22) and the highest income levels (92.1%; 209/227) is alarming. Also concerning is the fact that a greater proportion of White non-Hispanic participants received prenatal, χ^2 ($df = 1$, $n = 1{,}611$) = 5.384, $p = .020$, and postpartum breastfeeding education, χ^2 ($df = 1$, $n = 1{,}611$) = 5.202, $p = .023$ (see Table 6 for descriptive statistics). Those resident in the United States were also more likely to

report having received postpartum breastfeeding education χ^2 (df = 1, n = 1,592) = 11.684, p = .001, but there was no significant difference in receipt of prenatal education, χ^2 (df = 1, n = 1,593) = 0.515, p = .473.

Table 6. Participants who exclusively pumped for their first-born child who received prenatal and/or postpartum breastfeeding education

Category (*n* = prenatal; postpartum)	Prenatal		Postpartum	
	n	%	*n*	%
Education level (*n* = 1,625; 1,623)***				
≤ High school or equivalent (*n* = 89; 91)	45	50.6	71	78.0
Some college/university or Associate degree (*n* = 404; 403)	219	54.2	319	79.2
Bachelor's degree, trade qualification, or some graduate (*n* = 636; 633)	431	67.8	550	86.9
≥ Master's degree (*n* = 496; 496)	350	70.6	452	91.1
Household income (U.S. dollars) (*n* = 1,525; 1,525)***				
Less than 10,000 (*n* = 21; 22)	13	61.9	15	68.2
10,000–29,999 (*n* = 84; 85)	45	53.6	64	75.3
30,000–49,999 (*n* = 177; 178)	93	52.5	143	80.3
50,000–69,999 (*n* = 253; 256)	154	60.9	214	83.6
70,000–99,999 (*n* = 402; 402)	261	64.9	355	88.3
100,000–149,999 (*n* = 360; 355)	251	69.7	308	86.8
Greater than 150,000 (*n* = 228; 227)	160	70.2	209	92.1
Race/ethnicity (*n* = 21; 1,611)*				
White, non-Hispanic (*n* = 1,342; 1,343)	878	65.4	1,164	86.7
Person of color (*n* = 269; 268)	156	58.0	218	81.3
Country of residence (*n* = 1,593; 1,592) (postpartum***)				
United States (*n* = 1,375; 1,371)	886	64.4	1,192	86.9
Rest of the world (*n* = 218; 221)	135	61.9	173	78.3

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

5.2.2. Barriers to Information Seeking

5.2.2.1. Lack of Vocabulary and Terminology

Vocabulary and terminology are the gatekeepers to information acquisition. With increased reliance on non-mediated information seeking (i.e., without the assistance of someone else, like a subject expert or information professional), such as looking on the internet, knowing the name of the "thing" you are looking for becomes even more essential (see, for example, Furnas et al., 1987). Given that the majority of *BWN* study participants only heard the term "exclusive pumping" *after* they gave birth, they had no choice but to search using other language until they serendipitously discovered—"stumbled across"—the term "exclusive pumping." For example:

> *I started googling random words like "only pumping to feed baby" and stumbled across Amanda Glenn's website exclusivepumping.com. I signed up for the newsletter and saw that there was a Facebook group as well. (R918)*
>
> *I didn't learn about exclusive pumping until I was 4 months postpartum with my first. Mainly because I didn't know it was an actual thing and didn't know what to call it. My supply had dropped to nothing because I had no education on how to keep it going. Through random Google searches I finally found some websites and I was able to get lots of information. (R405)*
>
> *I stumbled upon the term exclusive pumping while looking for info on Pinterest. I saw there was a Facebook group called Exclusively Pumping Mamas and felt such relief and happiness to know I wasn't alone. I didn't realize exclusively pumping was a thing other people did as well. (R875)*

Active seeking, or even scanning, for information becomes difficult when an individual does not know what it is they are looking for. Given that most participants had not heard of the term "exclusive pumping" until after they gave birth, they were unable to actively seek or scan for information specifically concerning EPing—participants simply did not know it was a "thing." St. Jean's (2017) concept of incognizance, whereby an "individual does not yet perceive an inadequacy in their state of knowledge and does not yet have

even a visceral sense that they have an information need" (p. 315), is closely related: participants not only did not know *what* they did not know (an information gap), but they did not know *that* they did not know. This distinction will be discussed further in Section 5.5 below.

Given that participants' infant feeding plans (i.e. direct nursing) had often gone awry by the time they were looking for information on EPing, the finding that so many participants did not know of the term they should be searching for is concerning, especially because breastfeeding—and infant feeding in general—is no trivial matter.

5.2.2.2. Judgment

Loudon et al. (2016) found that, even online, "mothers feared being 'judged' by other mothers, family, and HCPs about their parenting choices, causing them to hold back and refrain from seeking advice on contentious or sensitive topics in particular" (p. 39). While internet anonymity played an important role in getting information needs met, mothers' fear of judgement was still not completely eliminated (Loudon et al., 2016; Plantin & Daneback, 2009).

In response to both Q126: *What reactions have you experienced when you have told others that you are/were exclusively pumping? What are some of the things others have said to you?* and Q138: *What would have made your experience of EPing* ***better****?*, participants expressed feeling judged from a variety of sources. For example:

> *[EPing would have been better if] health professionals like my doctor or LC talked with me in a non-judgmental way about my feeding options in a way that works for me and my family not just to promote a Breast is Best approach. (R827)*
>
> *I don't really tell many people, because I worry that they might judge me. When I initially started exclusively pumping, I was discouraged by my lactation consultant, a doctor, and my mother-in-law. (R1135)*

> *Also my lactation consultant made me feel judged for EPing rather than direct latching especially once I was able to direct feed again after initial nipple trauma. (R2129)*
>
> *I felt very judged by the nurses caring for my son in the nursery after birth. They wouldn't call me down for feedings as promised and provided contradicting advice on how/when to nurse. ... I finally saw a "lactation consultant" who was not helpful at all and I felt further judged by her. I later found out she was a pediatrician who really didn't know anything more than any other doctor about lactating. (R1821)*

Similarly, participants classified online support groups into those that judged and those that did not. For example:

> *[Except for EPing groups] all other breastfeeding groups seemed to judge me for not continuing to try to direct nurse. Like maybe I just didn't want it bad enough to make it work. (R786)*
>
> *I think what has been most important to me in these groups has been the support provided, given in a non-judgmental way no matter how they were feeding, whether they were EPing, supplementing, combo pumping and nursing, or deciding to wean to formula. (R827)*

It is against this backdrop that these breastfeeders have to reach out for support, clearly a daunting task if they feared or had already experienced the judgment of others for their breastfeeding without nursing.

5.3. *"I joined Facebook groups on EPing and gained a plethora of information! It seemed anytime I thought of a question or concern, I could go to the group and my question would be answered!" (R2338)*

Information Sources

BWN study participants consulted a number of information source, both for breastfeeding information in general and EPing specifically. Existing literature about breastfeeding information sources is examined before presenting the sources from which participants received prenatal and postpartum breastfeeding education, as well as from where they first heard the term "exclusive pumping." The sources participants sought EPing information from are then explored in depth.

5.3.1. Breastfeeding Information Sources

Breastfeeders prefer information from sources they perceive to be trustworthy and/or that provide information from individuals' own lived experience (Loudon et al., 2016; Song et al., 2013). While HCPs and reading materials were popular, Chezem et al. (2001) found that mothers were four times more likely to initiate a conversation about infant feeding with a family member or friend, irrespective of their chosen or preferred feeding method (human milk, formula, or both). The authors further found that having this informal information network has a positive influence on breastfeeding outcomes:

> Encouraging women to view friends and family with breastfeeding experience as sources of valuable advice may increase the likelihood that they will be called upon when breastfeeding assistance is needed. (Chezem et al., 2001, p. 24)

Books and other printed materials were found to be among the most useful sources in some studies (e.g., Grimes et al., 2014), while others did not find these sources useful (e.g., McDougall & Ecclestone, 2015). Breastfeeding information sources also include community-based peer groups (e.g., Shakya et al., 2017), the child's grandmother(s) (e.g., Cox et al., 2017; Karmacharya et al., 2017), and online social networks (Gray, 2013; McKeever & McKeever, 2017). Although fathers/partners are the most influential person in the initial decision to breastfeed (e.g., Freed et al., 1992), they are rarely mentioned as a source of information.

The internet is a popular source for early childhood information in general: Larsson (2009) found that 84% of respondents to a Swedish pregnancy clinic waiting room questionnaire had used the internet to look up prenatal information, assessing reliability by its degree of consonance with other sources. In contrast, Grimes et al. (2014) found that less than half (44%) of their Australian respondents had used the internet to access information about pregnancy. Interestingly, the type of pregnancy and

postpartum care respondents received altered their assessment of information usefulness: those receiving care from a midwife described their midwife as their most useful source of information, whereas the internet was the most useful source to those receiving care from a doctor. This was reflected in Lagan et al.'s (2010) study in which 49% of respondents (613 women from 24 countries) to their web-based survey reported dissatisfaction with information given by health professionals. They also found that respondents' confidence levels grew significantly after internet usage. A possible explanation for this could be O'Connor and Madge's (2004) finding that the internet was an important source of safe, non-judgmental advice and support for parents, especially because they are less likely than previous generations to receive support or up-to-date advice from their own parents.

Despite mixed findings regarding parenting information, the internet is a popular source of information about breastfeeding: of the 95% of respondents in McDougall and Ecclestone's (2015) study who had used the internet during pregnancy, 60% had searched for breastfeeding information. Fifty-six percent of postpartum mothers in Slomian et al.'s (2017) Belgian study had searched for breastfeeding information online; most (83%) found the information quite useful but did not rate the quality of information very highly (an average of 5.3 out of 10). Because of questions about accuracy, completeness, and trustworthiness, participants expressed a desire for health professionals to suggest reliable websites for them. In contrast, Brown (2016) found that:

> Websites in particular were seen as excellent examples as they provided detailed information, not simply about health benefits and latch but they had detailed information and suggestions of how to solve problems that might arise. These sources of information have been built up over time, are accurate, and widely seen to be excellent sources of information. (p. 106)

Brown (2019a) also advocates for people to educate themselves about how to recognize reliable sources: in 2019, she published a book titled *Informed is best: How to spot fake news about your pregnancy, birth and baby*, aimed at teaching parents "the skills to understand the research, what it means (and also what it doesn't mean), so that you can make your own evidence-informed decisions about what is best for you and your family" (p. 8). Individuals are indeed concerned about authorship of online information. For example, participants in Bernhardt and Felter's (2004) study "expressed preference for online clinical health information that is presented by clinical professionals, and online parenting advice that is presented from other parents" (p. 1). Since breastfeeding information straddles the line between health and parenting information, caregivers may not want to limit their information seeking to clinical sources, but should take care when receiving clinical information from other parents.

While a number of studies have found social networking sites are an important and frequently used source of parenting information (Bartholomew et al., 2012; De Choudhury et al., 2013; Nolan et al., 2017; Papen, 2013; Sayakhot & Carolan-Olah, 2016), one study found that infant feeding information on these platforms was either not present or not memorable (Asiodu et al., 2015). Bartholomew et al. (2012) found that 44% of the mothers in their study reported more Facebook use after birth, but that they were primarily using it to build and maintain weak-tie connections, not seek information. Similarly, Cowie et al. (2011) found that posts and comments on the Australian Breastfeeding Association's forum almost universally sought or provided emotional support (82% and 97% respectively); only 29% of posts and 8% of comments sought and/or provided factual advice/opinions. In contrast, Gray (2013) found that the majority

of breastfeeding posts on a variety of online discussion boards sought (79%) or provided (62%) informational support, with another 8% of posts seeking and 9% of posts providing tangible support, respectively. Only 9% of posts sought and 19% provided either emotion or esteem support. It is likely that the culture and practices of specific online support groups contribute to the nature of the support sought and provided (practical, informational, and/or emotional) (see Section 6.6.4, Online Support Groups as Communities of Practice).

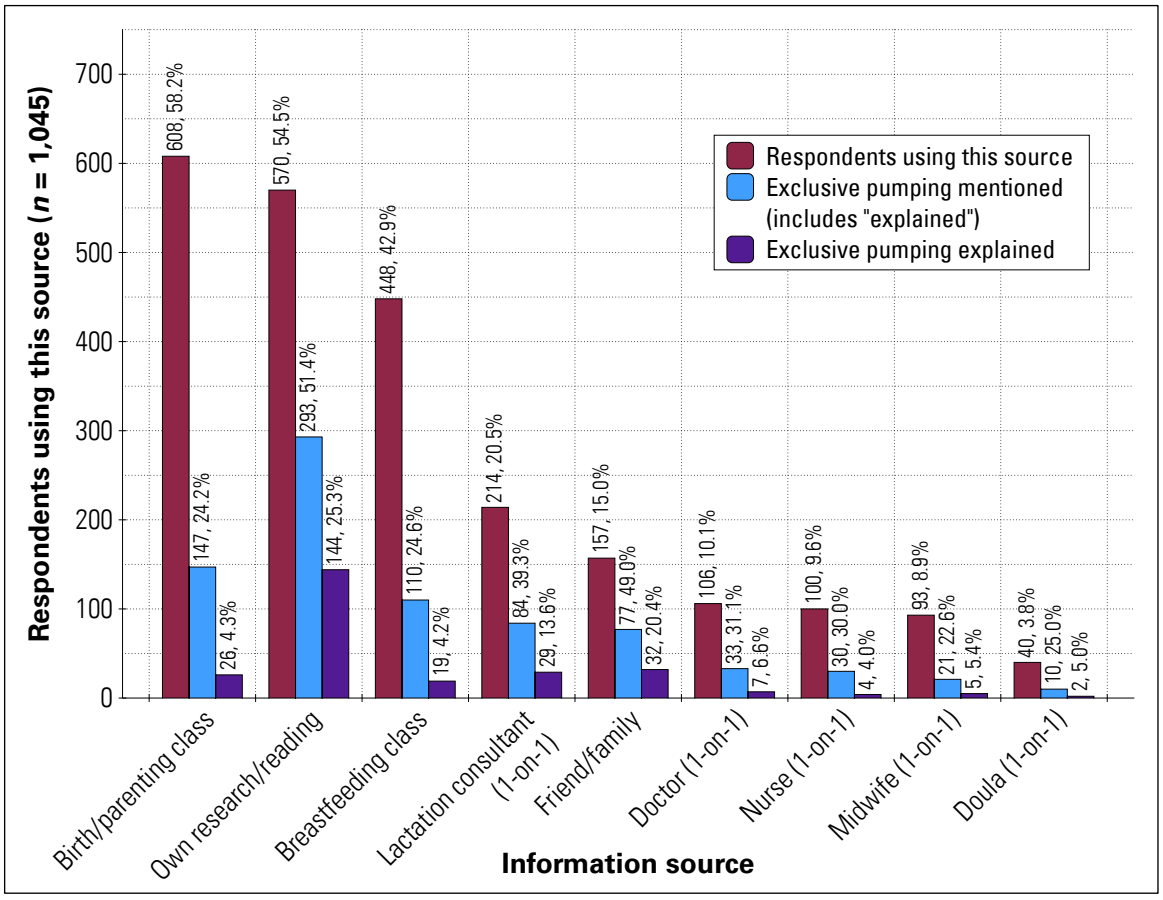
Lastly, it is worth remembering that many parents around the world do not have the chance to participate online, whether the internet, social networking sites, or online support groups, because the digital divide is still a significant problem. Additionally, those who do not have the necessary literacies or access to the internet are still disproportionately represented among particular populations, including those with lower SES, less educated people, and POC, especially Blacks (Brodie et al., 2000; Cotten & Gupta, 2004; Sayakhot & Carolan-Olah, 2016; Song et al., 2013)

5.3.2. Prenatal Breastfeeding Education

Unfortunately seeking out prenatal breastfeeding information/education did not particularly help *BWN* study participants learn about EPing, as Figure 16 illustrates. Taking a childbirth and/or parenting class that included breastfeeding information was the most popular source of prenatal breastfeeding education, with 58.2% (608/1,045) of participants who EPed for their first-born child(ren) utilizing this source. However, only 24.2% (147/608) of these classes mentioned EPing and only 4.3% (26/608) actually explained what EPing was. Doing one's own research and reading (which included sources such as websites, social networking sites, and books) was the next most popular

source of prenatal breastfeeding information (54.5%; 570/1,045) and the only source that mentioned EPing over half of the time (51.4%; 293/570), although only one quarter of these sources (25.3%; 144/570) actually explained it. Less than one quarter (24.6%; 110/448) of breastfeeding classes—a source that should explain all forms of breastfeeding—even mentioned EPing, with a worrying 4.2% (19/448) having explained it.

Figure 16. Participants who exclusively pumped for their first-born child(ren)'s sources of prenatal breastfeeding education and whether those sources mentioned or explained exclusive pumping (*n* = 1,045)

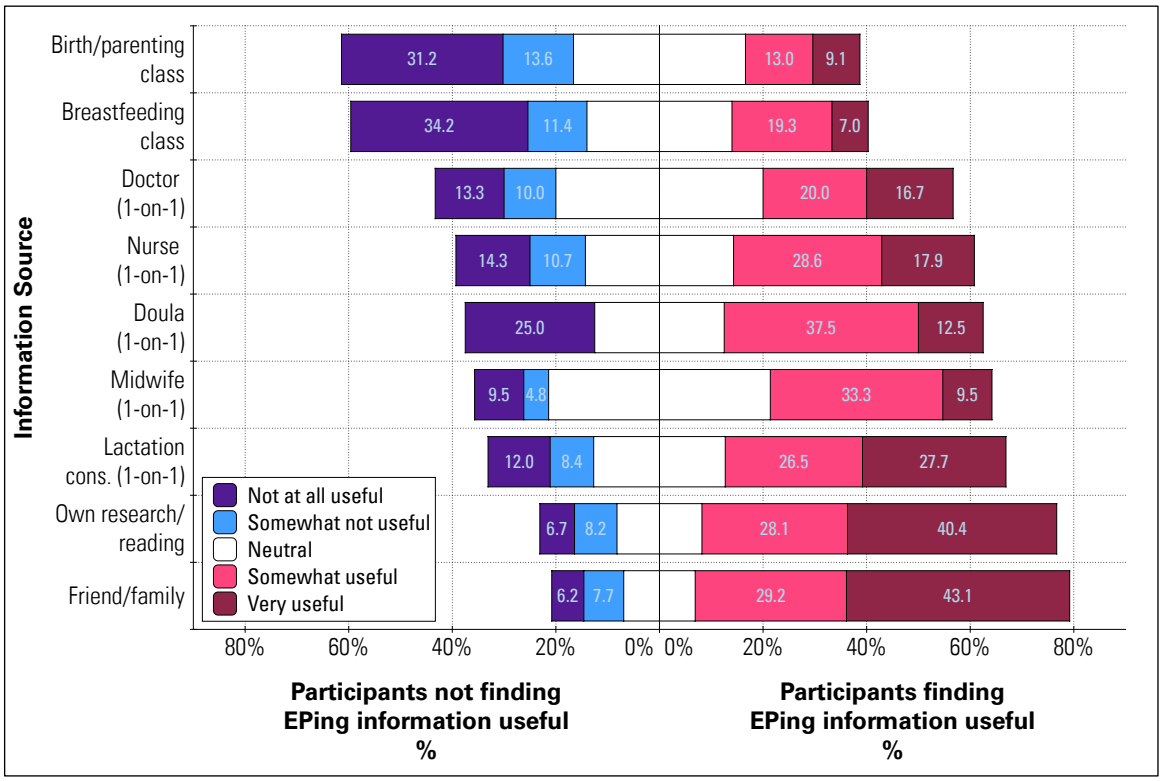


When participants did their own prenatal breastfeeding research and/or reading, the most common source was websites (77.7%; 443/570), followed by books (54.9%;

313/570), online support groups (43.0%; 245/570), and seeking out information from friends and family members (28.8%; 164/570). That over half of the participants used books to learn about breastfeeding is not surprising, given the plethora of books about breastfeeding are on the market.

The source of prenatal breastfeeding information also affects how useful a participant found the information about EPing, if EPing was even mentioned or explained, as illustrated in Figure 17. When EPing information was mentioned or explained, childbirth/parenting and breastfeeding classes provided the least useful and participants' own research/reading and friends/family provided the most useful EPing information.

Figure 17. Usefulness of exclusive pumping information when it was mentioned or explained by prenatal information sources (*n* = 1,045)

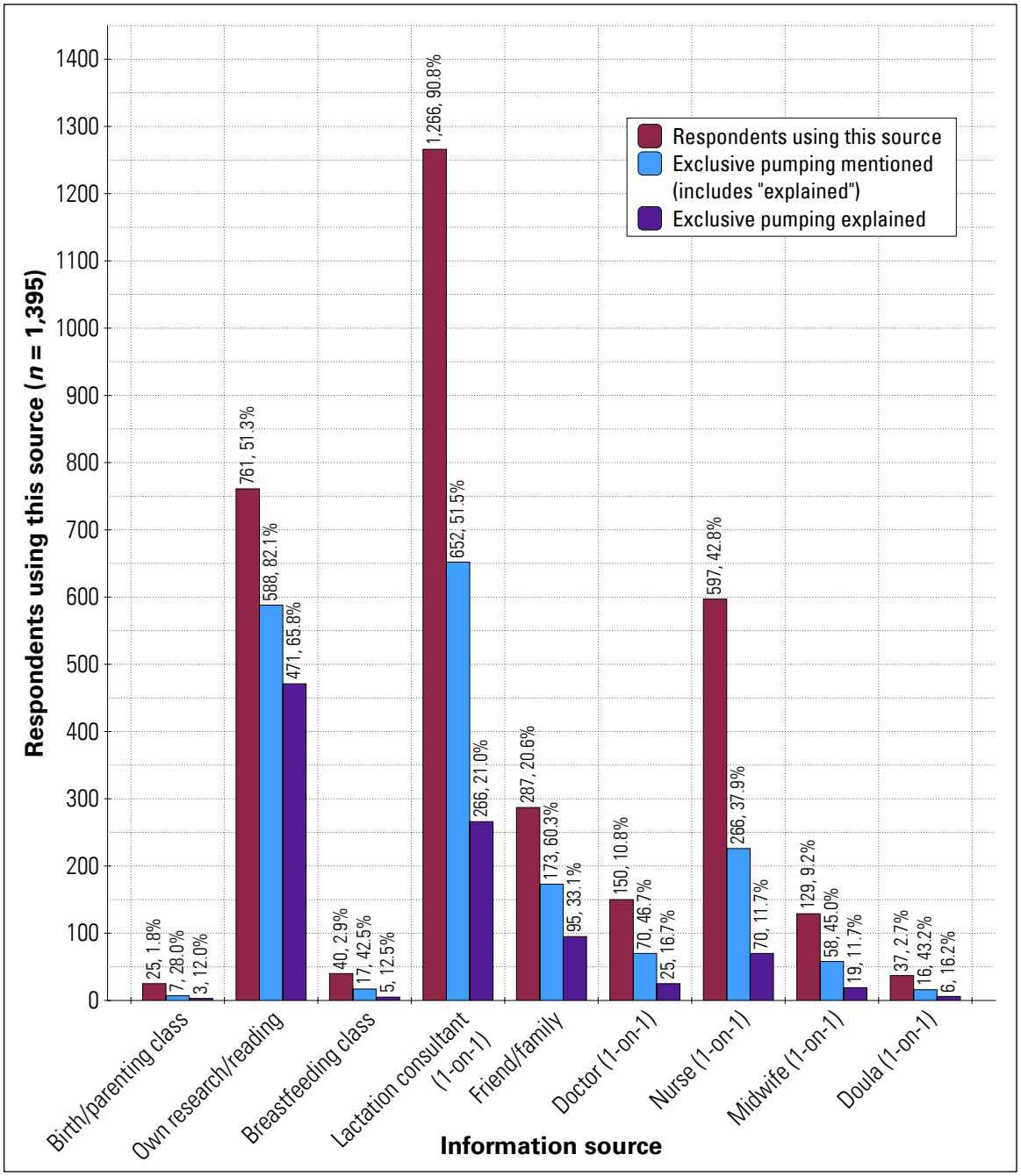


5.3.3. Postpartum Breastfeeding Education

Repeating the same analysis with regard to postpartum breastfeeding education, Figure 18 illustrates that postpartum information sources differ from prenatal information sources—not surprisingly, very few participants took a childbirth and/or parenting class or a breastfeeding class once they had given birth. In contrast to the one in five (20.9%; 214/1,045) who had received prenatal breastfeeding education from an LC, the majority (90.8%; 1,266/1,395) had received education from this source postpartum. While an improvement on the 39.3% (84/214) of LCs who mentioned and 13.6% (32/214) who explained EPing prenatally, still only 51.5% (652/1,266) mentioned it and just 21.0% (266/1,266) explained it postpartum.

Postpartum, one's own research and reading was still the second most popular source of breastfeeding information (51.3%; 761/1,045) and, again, the most likely to both mention (82.1%; 588/761) and explain (65.8%; 471/761) EPing. Given that many participants would have been actively scanning and seeking (McKenzie, 2003) EPing information soon after giving birth (recall that 84.5% of EPing journeys started in the first month postpartum), the high proportion of sources that mentioned and/or explained EPing is likely a reflection of targeted information seeking. In other words, participants continued to seek until they found a resource that provided them with EPing information and, therefore, participants' own research and/or reading would, almost always, ultimately provide them EPing information. This figure did not reach 100% likely because some participants abandoned their own research/reading seeking efforts before they found information that mentioned or explained EPing.

Figure 18. Participants who exclusively pumped for their first-born child(ren)'s sources of postpartum breastfeeding education and whether those sources mentioned or explained exclusive pumping (*n* = 1,395)

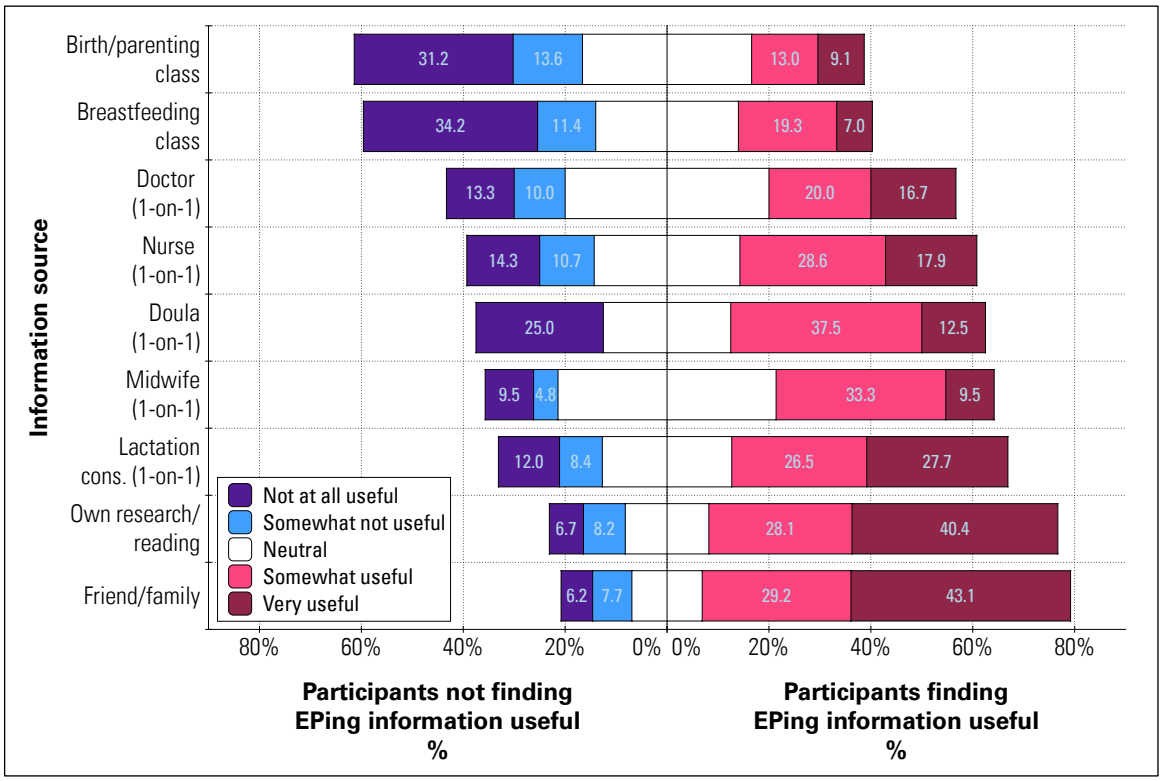


When participants did their own postpartum breastfeeding research and/or reading, the most common source was, as for prenatal information, websites (77.4%; 554/716). However, the second most popular source—predictably given the avenues of

recruitment for the *BWN* study—was online support groups (70.1%; 502/716). Postpartum, one third (33.7%; 241/716) of participants sought information from books and one quarter (25.4%; 182/716) from their friends and/or family.

Figure 19 illustrates the usefulness of EPing information when it was mentioned or explained by information sources consulted postpartum. Once again, when EPing information was mentioned or explained, participants' own research/reading and friends/family provided the most useful EPing information; childbirth/parenting and breastfeeding classes and doulas provided the least useful information, but it should be noted that the numbers of participants using these sources were very small compared with other postpartum sources (see Figure 18).

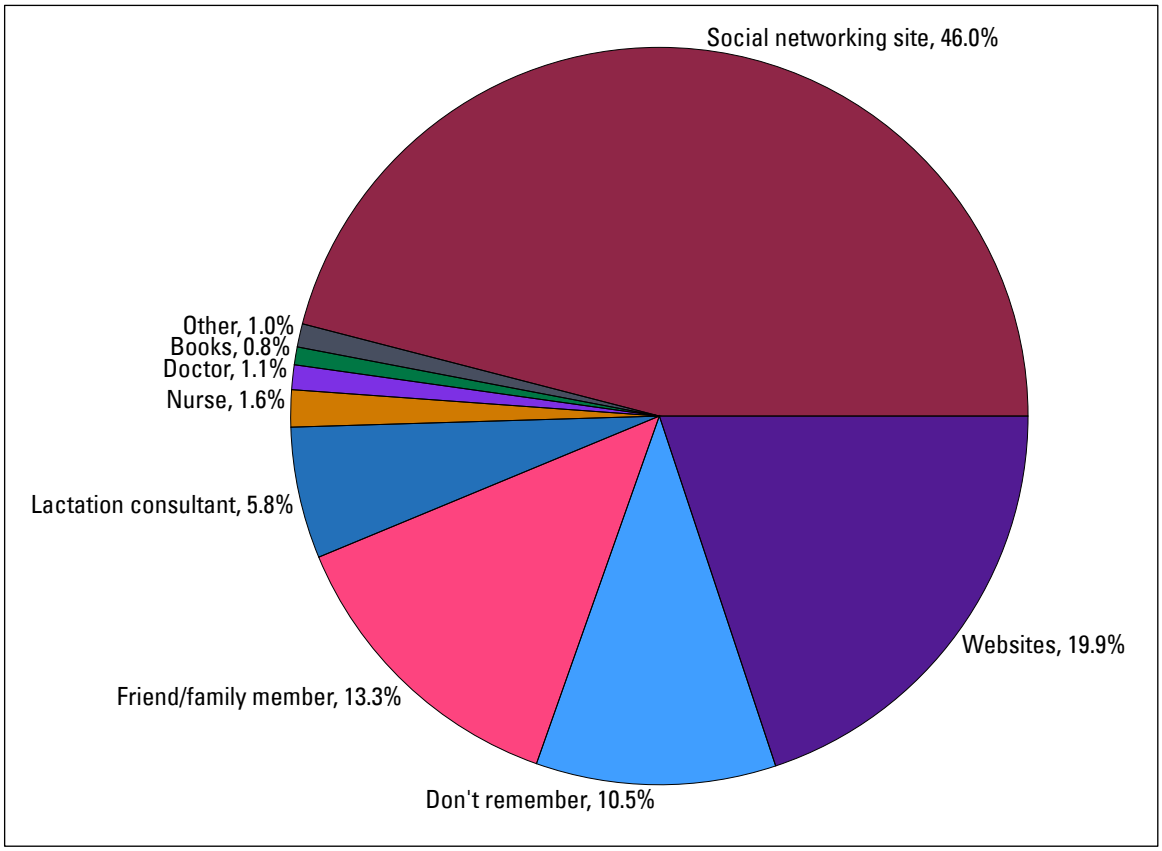
Figure 19. Usefulness of exclusive pumping information when it was mentioned or explained by postpartum information sources (*n* = 1,630)



5.3.4. Source of First Hearing the Term "Exclusive Pumping"

Almost half of the participants who EPed for their first-born child first heard the term "exclusive pumping" from social networking sites (46.0%; 765/1,664), followed by static websites (19.9%; 331/1,664). Figure 20 illustrates the sources that participants first heard the term from.

Figure 20. Where participants first heard the term "exclusive pumping" from (*n* = 1,664)



Notes. Other includes midwife (8/1,664), journal articles (4/1,664), doula (3/1,664), television (1/1,664), radio (1/1,664), leaflets/pamphlets (1/1,664). No participant had first heard the term "exclusive pumping" from magazines or newspapers.

Excluding those who did not remember where they first heard the term, compared to those who first heard the term "exclusive pumping" prenatally, those who had first heard the term postpartum were more likely to have first heard the term from a social

networking site (52.5% vs. 30.3%; 627/1,194 vs. 117/386), χ^2 (df = 1, n = 1,580) = 57.709, p < .001, from a website (22.5% vs. 14.8%; 269/1,194 vs. 57/386), χ^2 (df = 1, n = 1,580) = 10.733, p = .001, or from an LC (6.7% vs. 3.1%; 80/1,194 vs. 12/386), χ^2 (df = 1, n = 1,580) = 6.861, p = .009. Those who heard the term prenatally were more likely to have first heard the term from a friend or family member (34.7% vs. 7.0%; 134/386 vs. 83/1,194), χ^2 (df = 1, n = 1,580) = 189.778, p < .001. This suggests that those who only found out about EPing postpartum first found out about it while actively seeking or scanning for information, likely as a result of identifying an urgent information need in response to a breastfeeding problem. For example:

> *While doing online research about latching problems I came across the concept. I began doing more extensive web searches and started reading various websites and blogs. exclusivepumping.com was where I got most of my info. (R1169)*

In contrast, those who first heard the term prenatally may have first heard about EPing by non-directed monitoring—perhaps by "chatting with acquaintances" (McKenzie, 2003, p. 26)—or by proxy. For example:

> *I was discussing my issues with another mom of a newborn in our neighborhood who is able to directly breastfeed and she told me about a group on Facebook for exclusive pumpers. (R1243)*

> *A friend who had EPed for a while reached out and told me about the FB group "Exclusive Pumping: Breastfeeding Without Nursing" which educated me SO much about all things EP. (R198)*

5.3.5. Exclusive Pumping Information Sources

Sections 5.3.2 and 5.3.3 examined whether *breastfeeding* education included information about EPing. This section examines sources of EPing information specifically. There are few studies describing sources of information about milk expression in general. According to Rasmussen and Geraghty (2011),

> At present, the lay literature (e.g., magazine articles, Internet postings) remains a major source of information about maternal behavior related to milk expression, and some of these behaviors are of public health concern. (p. 1356).

McInnes et al. (2015) found that milk expression and pumping information on U.K. websites was inconsistent, incomplete, and not evidence-based. Furthermore, commercial websites (i.e., pump manufacturers' sites) emphasized the lifestyle restrictions associated with nursing, lack of sleep, and the opportunity pumping provided for babies to bond with other family members, whereas non-commercial sites emphasized hand expression and pumping due to separation from the baby due to circumstance, not choice.

In their analysis of sources of information and support for breastfeeding, Sutter et al. (2018) found that 78.3% of their participants (U.S. women at 6 weeks postpartum) had obtained pumping information from professional sources, such as LCs (53.2%), nurses/midwives/nurse practitioners (40.0%), and doctors/physician assistants (18.3%). Over one third (38.9%) had received support on breast pumps and milk expression from their friends and/or relatives. Reflecting Qi et al.'s (2014) finding that 65.2% of the IFPS II respondents in their analysis had learned how to use a breast pump from the manual, internet, or by themselves, only 28.4% of participants in Sutter et al.'s study had received education and/or information on breast pumps and milk expression; of those that did, 20.1% learned from books or videos and 21.9% learned from websites.

Most recently, Dietrich Leurer et al. (2019) found that LCs were the most common source of *valuable* information about pumping, followed by the internet, friends/family, and other mothers, including mother-to-mother online support groups; nurses and physicians "did not or were unable to provide the desired expression information" (p. 6).

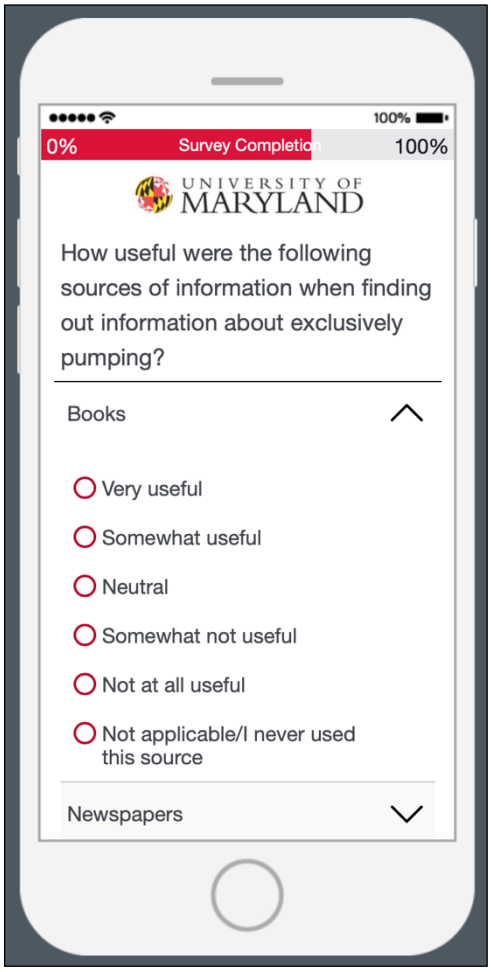
One question in the *BWN* study, Q114: *How useful were the following sources of information when finding out information about exclusively pumping?,* asked participants to rate the perceived usefulness of a variety of sources of EPing information. As this question was not related to the birth of a child, as prenatal versus postpartum questions were, all participants who answered Q114 are included in this analysis. Table 7 presents the number and proportion of participants who used each source for EPing information.

Table 7. Source of exclusive pumping information (n = 1,823)

Source	*n*	%
Online support groups	1,721	94.4
Websites	1,569	86.1
Lactation consultant	1,515	83.1
Doctor	1,280	70.2
Nurse	1,254	68.8
Friend/family member	1,204	66.0
Books	939	51.5
Leaflets/pamphlets	751	41.2
Journal articles	741	40.6
Midwife	551	30.2
Magazines	457	25.1
Newspapers	415	22.8
Television	402	22.1
Radio	376	20.6
Doula	252	13.8

It was unexpected to find approximately one in five respondents had used more "traditional" information sources, such as newspapers (22.8%; 415/1,823), television (22.1%; 402/1,823), and radio (20.6%; 376/1,823), to find EPing information. On a visual inspection of responses by participants who rated these sources (and perhaps magazines as well), they seldom selected "not applicable/I did not use this source"—available as the last response option, as illustrated in Figure 21.

Figure 21. Appearance of Q114: *How useful were the following sources of information when finding out information about exclusively pumping?* on a smartphone

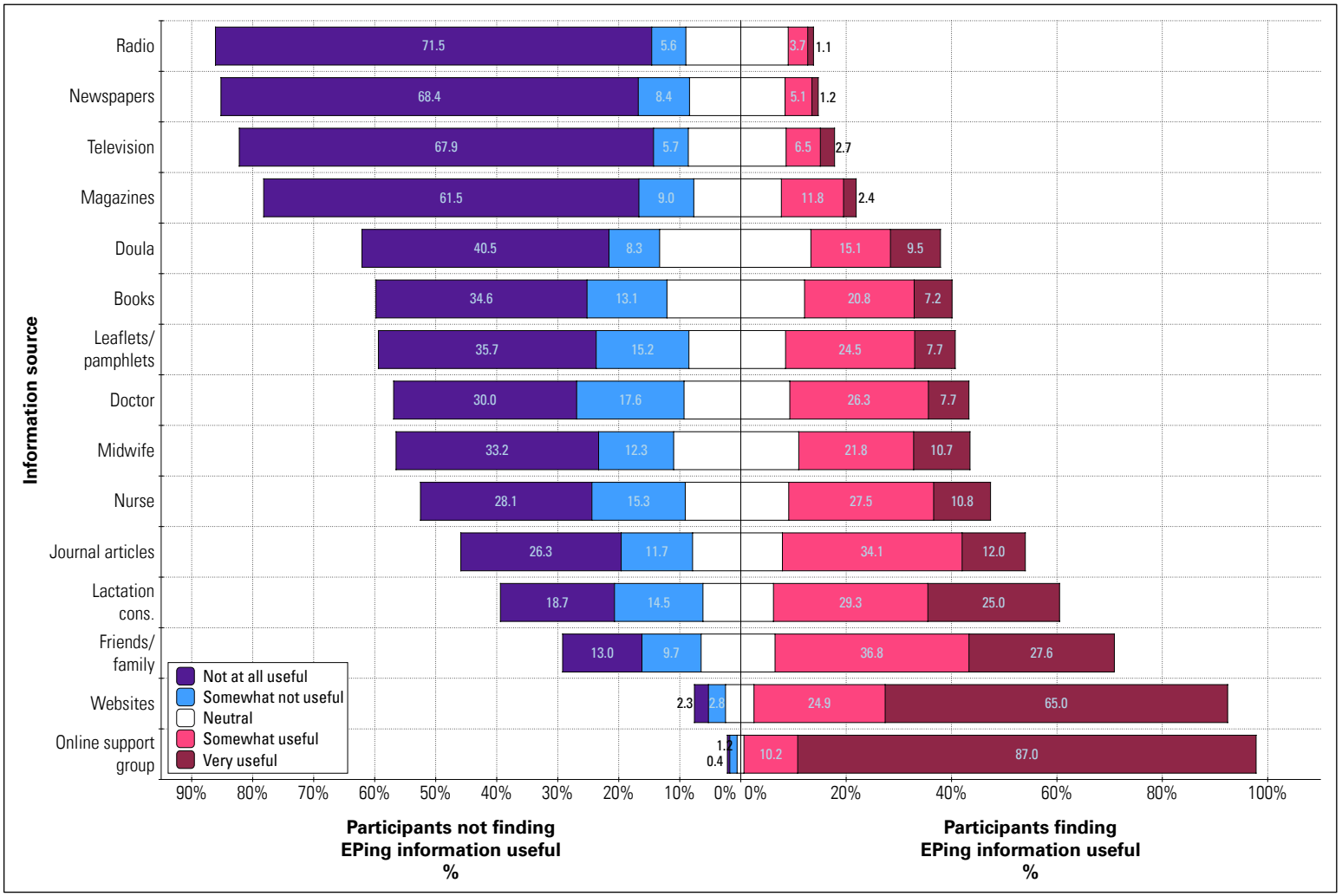


Some participants only selected this option for sources presented to them later in the question. It seems likely, therefore, that participants who rated these sources did not utilize this opt-out option appropriately, therefore giving the impression that they had used these sources to find EPing information when they had not. This was a survey construction error: this question was a one-part question, unlike those pertaining to prenatal and postpartum breastfeeding education where participants were asked which sources they had used in one question and then were asked in a subsequent question to rate only the sources they had picked. Unfortunately, excluding responses that never

selected the “not applicable/I did not use this source” response option would not solve this problem, as some participants never selected this option because they left blank those sources they (presumably) did not use; other participants appeared to have realized that there was a “not applicable/I did not sue this source” option part way through the question, but it would be impossible to discern this with certainty.

Nevertheless, it seems reasonable to assume that the overall findings as to the usefulness of each source of EPing information, especially as compared to each other, remains valid (e.g., participants would not have rated a source they had never used as useful, other than by error). *BWN* study participants’ perceived usefulness is presented in Figure 22 and illustrates that online support groups, followed by websites, friends/family members, and LCs were perceived to be the most useful sources of information about EPing.

Figure 22. Responses to Q114: ***How useful were the following sources of information when finding out information about exclusively pumping?*** **(*n* = 1,823)**



Participants also responded to an open-ended question about obtaining EPing information: Q115: *In your own words, please share how you have learned about EPing. Where do or did you go to ask questions? Did you get helpful answers? How do you feel about using those sources of information?*. Responses from this and other open-ended questions provide more insight into participants' information behavior and can mitigate some of the issues with Q114's construction. The five most useful sources are examined in the next sections.

5.3.5.1. Online Support Groups

Online support groups were clearly considered the most useful source of EPing information. While this could be influenced by the recruitment method for this study, many participants had also sought information offline: prenatally, from childbirth/parenting/breastfeeding classes; postpartum, from LCs. In response to Q139: *What would have made your experience of EPing* ***worse?***, a predominant theme was *not* having online support and information. Finding an online support group, such as a Facebook group, greatly improved participants' information experiences. Many expressed finding a Facebook group serendipitously. For example:

> *I was in a Facebook birth month group[14] and an EPing preemie mom started a sub-group for pumping and supplementing moms of the birth group. And there was mention of a larger pumping group. My IBCLC also told me about a low supply Facebook group. All of these groups helped me the first time around and now again the second time around. (R2339)*

Many others were told by proxies (McKenzie, 2003)—those around them, most likely in their microsystem, about online support groups:

[14] A group for parents, usually mothers, of children born in a specific birth month, e.g., "April babies 2016."

I would often contact my lactation consultant, even though she kept trying to get me back to breast. She was the one who told me about the Exclusively Pumping Moms group which I have consistently used in my pumping journey. (R656)

My friend had a baby just before I got pregnant and she talked about pumping and showed me a group on Facebook. (R494)

Having to actively search for the right group was also described by some participants:

Lots of googling in the beginning. … Facebook was good when I found the right groups. (R95)

It was learning out of experience. Did not have anyone to ask questions. Had to figure out myself by watching YouTube videos and researching about it until I found this exclusive pumping group on Facebook and became a silent observer and learner from people's experience. (R787)

For the first 2 weeks of my daughter's life I scoured the internet to find out what I was doing. In my postpartum sleep deprived haze I needed to find a community of moms that were doing what I was doing--hooking up a pump to my breast and feeding my child. Certainly I couldn't be alone! It was by searching through Babycenter.com's community pages [I found] the EPing group. (R844)

An overwhelming number of participants explained why online support groups were the most useful source for EPing information. For example:

I learned most about EPing [exclusive pumping] through my own research via websites and on Facebook support groups. I got the most useful answers via the online support groups and I felt the information was useful even if it wasn't from a medical professional or peer reviewed journal since it was advice about various experiences. (R61)

Most participants trusted the information they gathered on these groups:

I found the bulk of my information in a book, then my neighbor told me about a Facebook group. I found both sources to be reputable and extremely helpful. (R1537)

Although most advice given on that group is based on anecdotal evidence/direct experience, I feel confident about the information I receive. (R1212)

Some participants did note, however, that not all online support groups provided the same quality of information. For example:

My friend first told me about EPing. Then directed me to a Facebook group. … I typically went to Exclusive Pumping: Breastfeeding Without Nursing to ask and

receive answers. Then to wean I started using Life After the Pump. I got super helpful advice - the Facebook groups were awesome. Halfway through my journey I joined another EP group. I found that these groups weren't as knowledgeable and while they called themselves an EP group, most were pumping and nursing - so the advice I saw being given to new EPers wasn't always very good/useful. (R2385)

Several participants described having to satisfice with the information they gathered through support groups:

I have mostly learned through the Facebook group Exclusive Expressers Australia and friends who have done the same/are currently expressing. I found it very difficult to find information from healthcare professionals or sources and didn't realise exclusively expressing was even an option until my daughter was around 6 weeks old. While I would have preferred to have received information from official sources, I am comfortable getting information from other women in the same situation. (R1494)

I dislike that most of my info had to be "crowd-sourced" (as Facebook groups are often riddled with misinformation), but the camaraderie and support of other EP moms was helpful. (R1558)

Other respondents were cautious about the information they received through online support groups:

A nurse taught me how to hand express colostrum, provided a hospital grade pump while inpatient and suggested I rent one once home. She also told me how often to pump. My OB and a couple other doctors helped me when I developed mastitis a couple times and an abscess. I got all remaining info from LCs, online message boards, and Facebook groups. All were helpful, but I feel there is a lot of misinformation in some of the Facebook groups. (R2106)

I'm a part of a few (4) Facebook groups that have been beyond helpful. I get most information there and then look up things to confirm the accuracy. (R2154)

I trust that the women in the exclusively pumping mamas Facebook forum are being honest about what works and doesn't work for them. I've definitely gotten most of my tips from the group, but I usually try and follow up with additional web searches to verify, especially for things like supplements. But for things like choosing duckbill valves, I totally trust the ladies in the group! (R1099)

However, even for these participants, online support groups provided far more than positive information experiences—they were also a vital source of emotional support, as will be addressed in Section 6.6.

In their information capacity, online support groups reflect Chatman's (1999) concept of *life in the round*—a dynamic information world based largely on approximation. A life in the round is "a public form of life in which things are implicitly understood" (Chatman, 1999, p. 212), within which members of the group or society share social norms and a common worldview. Within the "small world" of that group, "members determine what is, and what is not, important, and which sources can be trusted … information seeking beyond that world is neither needed nor wanted" (Fulton, 2005, p. 80). However, just as some *BWN* study participants sought or verified information from sources other than online support groups, members may move out of the group if they need more precise information. Members of small worlds become insiders in order to participate: while many *BWN* study participants would, at first, consider an online support group as, perhaps, mass media (inner macrosystem) or community service (exosystem), as time passes and they adopt the small world's social norms and worldview, it become a cherished part of their microsystem. Life in the round is similar to that of a *community of practice*, which is examined in the next chapter.

5.3.5.2. Websites

As Figure 22 illustrated above, websites were also a very popular source of information about EPing, especially KellyMom.com, an evidence-based breastfeeding website established by IBCLC, Kelly Bonyata, and exclusivepumping.com, a blog-based

website run by former exclusive pumper, Amanda Glenn. Many participants described using these websites as a springboard for finding EPing support groups:

> *I first started with exclusivepumping.com and then quickly found an amazing community of mommies just like me on Facebook. Exclusive Pumping Mamas has been the biggest blessing to my pumping journey. (R366)*

> *With my 2nd I wanted to be more successful and used Google. It led me to the Kelly mom website which led me to the exclusive pumping group on Facebook which is extremely helpful. (R303)*

Some participants considered websites to be more reliable sources of information than online support groups:

> *I trust the websites because they are more research based (cite journals, books, studies) & written by nurses/LCs. The Facebook page is good for support but I take somethings with a grain of salt because the members are not all health providers. (R2159)*

> *I like having so much info so readily available but I have to remember to take everything as opinion, unless I'm reading a research article or something from kellymom for instance. (R2073)*

However, some participants noted that websites offer less personalized information than online support groups. For example:

> *Information I found online was very helpful, and at the same time, I had to keep in mind that not all babies are the same so I had to always adjust to my baby's needs and not to always follow what I read online. (R1650)*

5.3.5.3. Friends and Family Members

Despite rating friends and family members as the third most useful source of EPing information, few participants wrote about the information they received from them. When they did, it was often limited to basic information, and they tended to describe subsequently before seeking more in-depth information elsewhere:

> *I found out from some friends who EPed that this was an option as I had never heard of it. When I did find out about this, I asked them questions about their*

> *experience and that was helpful. I then started to do research online on my own to get the most information I could. (R966)*
>
> *I learned the most initially about EPing from a friend who had also recently had her 2nd baby and was EPing again. She put me in contact with the EPing FB group I am a part of. I felt comfortable asking both my friend and the FB group any and all questions, concerns etc. (R2399)*

Unfortunately, some participants did not think of consulting their friends for EPing information:

> *By the time I realized a lot of my friends were also EPers, I had already established my supply and gotten the hang of it all. (R1445)*
>
> *I got the most info from friends and their experience. My issue was that I started talked to them about it too late. I wish I had done better research from day one. (R858)*

It is likely due to the recruitment methods for the *BWN* study that participants did not express reliance on their friends or family members for information—people who had relied on friends or family members likely did not join online support groups within which most participants learned of this study. Instead, friends and family appear to be more focused on introducing EPing to participants, rather than being an in-depth source of information.

5.3.5.4. Lactation Consultants

LCs were the fourth most useful EPing information source, with 54.3% (823/1,823) of participants who used them rating them as "somewhat useful" or "very useful." However, 33.3% (504/1,823) of participants rated them as "somewhat not useful" or "not useful at all," which is concerning given that LCs are, after all, certified as lactation experts. Hospital LCs were criticized for the lack of information they provided about EPing:

I wish I would have been more educated about it by the lactation consultant and doctors at the hospital. I feel that they only informed me about direct nursing. (R221)

I was helped by outpatient lactation consultants, a friend that is a lactation consultant, and a lot of information from google searching exclusive pumping because little information is given on exclusive pumping in the hospital setting. (R1464)

The hospital we were at had 24 hour lactation consultants. They were very knowledgeable about breast-feeding and very encouraging to feed the baby at the breast and to teach you how to pump after feeding the baby from the breast. I must say I only had one lactation consultant out of about six talk to me or encourage me about exclusively pumping when my breast-feeding issues occurred. Most lactation consultant were not even encouraging or mentioning the possibility of exclusively pumping to me. It was like this thing that they glanced over. (R1532)

Even participants who had children in the NICU, and therefore likely received support from LCs used to EPing, struggled with getting good information:

The lactation consultant in the NICU where my son was born was very helpful in getting me started, getting the right pump supplies, and establishing supply. I credit her with the fact I was able to exclusively pump at all. Surprisingly the lactation consultant at the second hospital, a Children's Hospital, was much less helpful. She was definitely more oriented toward direct breast-feeding [nursing], which is frustrating in a setting where that was not possible for so many babies. (R454)

[An] LC would have been more helpful had I been feeding at the breast. They weren't very knowledgeable about EPing even with the highest level NICU in the metro area. (R743)

Fortunately, some participants had exemplary experiences with hospital LCs:

My lactation consultants were very knowledgeable about pumping. Before I left the hospital after giving birth I was taught how to EP since my son was not latching yet. I also had two home visits with LCs and each one I learned something new. (R213)

I have a phenomenal set of LCs at the hospital and as an outpatient. They supported EPing and made sure that I got off to a good start in the hospital. They ensured that I was pumping enough, getting to sit with my babies while pumping, hand expressing, pumping long enough. They have supported me for a year. (R786)

Many of the participants who expressed positive information experiences with LCs only did so within certain limits:

> *My lactation consultant was helpful at getting me started with pumping, but she didn't seem to have much information about exclusively pumping after my supply came in. My daughter's pediatrician is supportive of exclusive pumping, but I haven't asked her many questions about it. (R9118)*

> *There isn't a lot of reliable information about EPing available. When I sought professional advice from my hospital's LC and my daughter's pediatrician, I was unable to get useful information. They simply tried to push me back to getting her to the breast and kept telling me how getting her to the breast is more effective than pumping. My concerns and questions regarding pumping were tossed to the side and ignored. (R161)*

> *I got great info [from] my amazing direct-entry homebirth midwife. She had very little experience with the basics of pumping equipment, but a wealth of knowledge & perspective & SUPPORT re: milk production, and also using a pump to partially simulate a baby in order to peacefully transition my body in the first couple weeks, etc. (R1171)*

Unfortunately, a large number of participants reported that the LCs with whom they interacted did not provide them with enough or the right information. For example:

> *More education regarding medical issues that are a side effect of EPing [would have made EPing better] …. No one expects the new mom in room 2 that just had a little baby to intend on EPing...so you are mostly left to conduct research on your own. And you usually are researching medical complications as they happen to you. Many lactation consultants are not familiar with the concept [of EPing] either...they want you to keep nursing so they don't give much warning for potential issues you may face from EPing. (R1651)*

Once again, timing of receiving information about EPing was critical to many participants:

> *I took a breastfeeding class before giving birth and it was never discussed what to do if baby won't latch. After baby was born, it would have been nice to have someone who could tell me about exclusively pumping, all the lactation consultants I saw never mentioned it or when I said that's what I was doing they acted as if it wouldn't work. (R354)*

> *I wish that I had had direction in advance of the birth of my son for how to effectively EP to bring my milk in and then build and maintain my supply. Those first few days were crucial and I did not get adequate guidance from the hospital*

nurses, and the LCs who saw me right before we were discharged from the hospital were more focused on getting my son to eat from a bottle (vs. syringe) so I didn't ask them many questions about pumping. (R1643)

5.3.5.5. Journal Articles

The use of journal articles was also surprisingly high and they ranked as the fifth most useful source. Using journal articles did not correlate with education level, race, or income level. One participant found good information from journal articles because of preferring *"to go to the source whenever possible as I research anything that interests me" (R1171)*. Another participant used journal articles to supplement their existing knowledge:

After learning more from fellow exclusive pumpers in these [online support] groups, I was able to extend my knowledge by browsing journal articles and identifying the success of certain techniques/methods of increasing supply and other related pumping issues. (R2251)

Some participants wished there were more journal articles and research on EPing. For example:

I mostly used online searches and Facebook groups … for answers to my pumping questions. I did not feel good about this - I wanted solid, data-driven answers and these places felt more anecdotal. But I did not find the resources I was looking for. (R1691)

I wish there were more university-conducted research on EP so I could have a more reliable source than just what someone said on Facebook. (R733)

5.4. *"I couldn't have been so successful with exclusive pumping if I hadn't had the information from online support groups."*
Information Outcomes

Existing literature, reviewed first in this section, often focuses on initiation, exclusivity, and duration as breastfeeding outcomes; however, behavioral, cognitive, and affective outcomes are also important. Outcomes associated with the timing of first

hearing the term “exclusive pumping,” as well as to receiving breastfeeding education are then provided. Lastly, outcomes associated with EPing information are discussed.

5.4.1. Breastfeeding Information Outcomes

Breastfeeding outcomes are improved when information *and* support are provided on an ongoing basis. However, information in the absence of support is ineffective. Two Cochrane systematic reviews explored this topic: one evaluated whether prenatal breastfeeding education increased breastfeeding duration (Lumbiganon et al., 2016) and the other assessed interventions for promoting the initiation of breastfeeding (Balogun et al., 2016). Lumbiganon et al. (2016) conclusively found that prenatal breastfeeding education had no effect on breastfeeding initiation and duration. This finding is consistent with Balogun et al. (2016), who found that interventions comprised of education only had no effect on breastfeeding initiation. However, when combining multiple methods of information provision *and* support, breastfeeding initiation is improved (Balogun et al., 2016; Lumbiganon et al., 2016). Duration and exclusivity are also improved, especially when counselling or education were provided in multiple settings (e.g., healthcare, home and family, community) (Sinha et al., 2015).

In addition to quantifiable/physical outcomes (e.g., breastfeeding initiation and duration), Lambert and Loiselle (2007) identified three positive outcomes of health-related information seeking: cognitive, such as increased knowledge and informed decision making; behavioral, including increased self-care abilities and adherence to recommendations; and affective, including decreased anxiety, fear, and distress. Unfortunately, cognitive, behavioral, and affective outcomes are seldom the focus of studies investigating the effects of breastfeeding education and support. Studies that have

measured these outcomes have found that breastfeeding self-confidence and self-efficacy, positive attitude towards and satisfaction with breastfeeding, and adherence to optimal breastfeeding practices (e.g., feeding within the first hour after birth) increase as a result of breastfeeding education alone (Cangöl & Sahin, 2017; Dennis et al., 2002; Flax et al., 2014; Huang et al., 2007; Iliadou et al., 2018; S. S. Lin et al., 2008; Noel-Weiss et al., 2006)

5.4.2. Outcomes Related to When Participants First Heard the Term "Exclusive Pumping"

Participants who first heard the term "exclusive pumping" postpartum experienced poorer outcomes. In response to Q112: *When you first started to EP, how knowledgeable did you feel about: How to exclusively pump*, those who had heard the term "exclusive pumping" prenatally had a mean score of 46.0 out of 100 (SD = 32.5; n = 338), whereas those who only heard the term postpartum had a mean score of only 27.6 (SD = 29.3; n = 1,069), U = 118,974, z = –9.530, $p < .001$.[15] This significant difference is not attributable to receiving prenatal breastfeeding education, U = 234,084, z = –0.581, p = .561.

Furthermore, those who had heard of EPing prenatally were more likely to select "just wanted to" in response to Q97: *What are the reasons you exclusively pump(ed) instead of directly nursing?*: 11.7% (45/386) of the participants who had heard the term "exclusive pumping" prenatally selected this reason, compared with 7.1% (85/1,194) of those who had only heard it postpartum, χ^2 (df = 1, n = 1,580) = 7.959, p = .005. This is

[15] A Mann-Whitney U test was performed because the data is nonparametric as assessed by Shapiro-Wilk's test $p < .001$.

not a surprising finding, as knowing about EPing prenatally provides participants with an opportunity to research it as an infant feeding option and develop an intention to breastfeed without nursing; those who only found out about EPing postpartum, likely due to unforeseen difficulties with nursing, would not be able to prepare in this same way.

When presented with a list of 56 emotions (listed in Appendix 7), participants who had first heard the term "exclusive pumping" postpartum were more likely to report the emotions listed in Table 8. No emotions were more likely to be reported by participants who first heard the term "exclusive pumping" prenatally.

Table 8. Emotions reported by significantly more participants who exclusively pumped for their first-born child(ren) and first heard the term "exclusive pumping" postpartum (*n* = 1,331)

Emotion	Before birth % (*n* = 321)	After birth % (*n* = 1,010)	χ^2 (*df* = 1, *n* = 1,331)
Frustrated	61.1 (196)	69.5 (702)	7.916**
Abandoned	4.7 (15)	8.6 (87)	5.346*
Devoted	45.8 (147)	53.1 (536)	5.160*
Rejected	13.1 (42)	18.2 (184)	4.554*
Burdened	43.9 (141)	50.7 (512)	4.464*
Sad	34.6 (111)	41.0 (414)	4.191*

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

With the exception of feeling devoted, the findings presented in Table 8 suggest that knowing EPing existed prior to giving birth likely would have improved participants' affective experiences. Participants who only found out about EPing postpartum perhaps felt more devoted because they persisted despite these other negative emotions.

Many participants expressed that knowing about EPing earlier would have improved their experience. For example:

> *Knowing it existed and was so common before I gave birth [would have made EPing better]. Had I known it was a possibility before, I wouldn't have had such a hard time when we "failed" at breast feeding. I wish I had known it wasn't direct nursing or nothing. (R60)*

Participants expressed that the delay in finding EPing information in general had negative effects on their EPing experiences. For example:

> *I just pumped endlessly for probably the first 9 months. I had no idea exclusively pumping was even a thing. I somehow stumbled across a Facebook group that was extremely useful and I was able to gather lots of tips from it. Unfortunately, I strongly feel I received this information too late, my supply was already established and it was low. (R399)*

> *I didn't get any information prior to giving birth about the concept of exclusively pumping. I felt all alone, trying to establish a milk supply with little to no information of how to do that while not traditionally breastfeeding. I feel my undersupply issue could have been different if I had known in those early days how long to stay on the pump, in order to establish a good supply, as well as how to increase supply. I generally felt like I discovered these things on my own, until I found that Facebook group. (R875)*

However, even though some participants did not find out that EPing was a "thing" until later in their breastfeeding journeys, they still described positive outcomes:

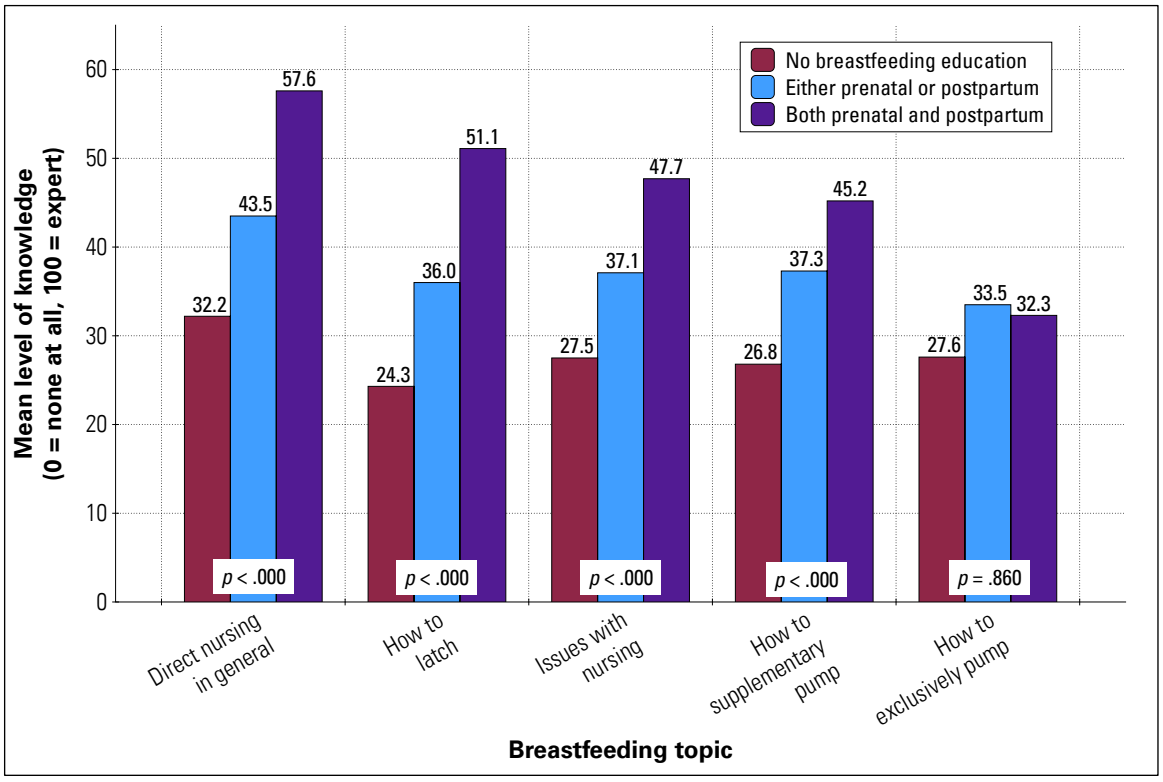
> *I learned about EPing after I was already EPing. I thought I was such a weirdo for doing it because I had never once heard about this. In taking courses, reading books, talking to breast feeding friends, no one had ever mentioned EPing. It wasn't until I was already doing it that I realized I should research how to make the most of pumping (particularly when I went back to work, I started looking into best practices about pumping, the right supplies etc.). This is when I stumbled across EPing on the internet. I really had no idea anyone else was doing this besides me. It was a huge relief! (R943)*

5.4.3. Outcomes from Prenatal and Postpartum Breastfeeding Education

For those participants who had completed at least one EPing journey, there was no significant difference in the duration they EPed based on whether they had received

prenatal or postpartum education. There were however, significant differences in how knowledgeable participants felt based on whether they had received prenatal and/or postpartum breastfeeding education. Figure 23 illustrates participants' perception of their knowledge at the beginning of their EPing journeys about several breastfeeding topics broken down by the amount (none, either prenatal or postpartum, or both) of breastfeeding education they received.

Figure 23. Mean perceived levels of knowledge at the beginning of participants' exclusive pumping journeys, split by the degree of breastfeeding education they had received (*n* = 1,420–1,471)



Notes. Spearman's rank-order correlation: direct nursing, $r_s(1,420) = .281$; how to latch, $r_s(1,436) = .216$; direct nursing problems, $r_s(1,425) = .305$; how to supplementary pump, $r_s(1,420) = .180$; how to EP, $r_s(1,471) = .005$.

For all four topics relating to direct nursing, the amount of participants' breastfeeding education was associated with significant differences in perceived knowledge. In stark contrast, breastfeeding education made no difference to participants'

perceived knowledge about how to EP which, in light of how few prenatal and postpartum information sources mentioned or explained EPing, is not entirely unexpected. This participant's sentiment is representative of many and demonstrates that the omission of EPing information from breastfeeding education has affective consequences:

> *I even took a breastfeeding class through [redacted] Hospital and they barely talked about pumping at all. That was frustrating because regardless of how my breastfeeding journey went I was going back to work so pumping was going to be a reality. They also NEVER mentioned Exclusive Pumping as a thing. (R713)*

Sources of prenatal breastfeeding education also affected participants' perceptions of their knowledge regarding both direct nursing and EPing. Those who took a childbirth/parenting class did not report feeling more knowledgeable about direct nursing[16] and those who took a breastfeeding class only reported feeling marginally more knowledgeable. Participants who took either type of class actually reported feeling *less* knowledgeable about how to EP compared with those who did not take these classes. Compared to participants who did not do their own research and/or reading, those who did reported feeling more knowledgeable about direct nursing as well as about how to EP. Descriptive and Mann-Whitney *U* statistics are reported in Table 9.

[16] This is the mean of participants' knowledge scores, out of 100, about how to direct nurse, how to latch, direct nursing problems, and how to supplementary pump.

Table 9. Sources of prenatal breastfeeding education and perceived knowledge (out of 100) about direct nursing and how to exclusively pump

Source of prenatal breastfeeding education	Knowledge about direct nursing (n = 966)			Mann-Whitney test statistic (direct nursing)	Knowledge about how to EP (n = 937)			Mann-Whitney test statistic (EPing)
	M	*SD*	*n*		*M*	*SD*	*n*	
Own research/reading				U = 128,430.5, z = 2.999, p = .003**				U = 121,284, z = 3.032, p = .002**
Used this source	52.7	24.9	435		34.2	31.9	511	
Did not use this source	49.1	24.6	531		28.3	29.8	426	
Childbirth/parenting class				U = 113,438, z = –0.038, p = .969			937	U = 95,338.5, z = –2.860, p = .004**
Used this source	50.9	24.4	561		29.4	30.9	543	
Did not use this source	49.9	24.9	405		34.4	31.2	394	
Breastfeeding class				U = 120,892, z = 1.435, p = .151				U = 94,994, z = –3.149, p = .002**
Used this source	52.4	23.9	421		27.8	29.4	407	
Did not use this source	49.0	25.0	545		34.4	32.2	530	

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

Source(s) of postpartum breastfeeding education also affected participants' perceived knowledge of both direct nursing and EPing. As reported in Table 10, and consistent with prenatal breastfeeding information, compared to participants who did not do their own research and/or reading, those who did felt more knowledgeable about how to EP, but did not feel more knowledgeable about direct nursing. This is likely because most participants would have been targeting their postpartum breastfeeding information seeking to focus on EPing, not nursing. Although the number of participants who received postpartum breastfeeding education from childbirth/parenting classes and midwives was very low, those who did actually reported feeling *less* knowledgeable about how to EP compared with those who did not use these sources.

Table 10. Source of postpartum breastfeeding education and perceived knowledge (out of 100) about direct nursing and how to exclusively pump

Source of postpartum breastfeeding education	Knowledge about direct nursing (n = 1,303)			Mann-Whitney test statistic (direct nursing)	Knowledge about how to EP (n = 1,255)			Mann-Whitney test statistic (EPing)
	M	*SD*	*n*		*M*	*SD*	*n*	
Own research/reading				U = 217,525, z = 0.794, p = .427				U = 213,661, z = 2.643, p = .008**
Used this source	46.0	24.4	665		34.8	31.0	642	
Did not use this source	45.0	24.2	638		30.4	30.3	613	
Childbirth/parenting class				U = 15,308, z = 0.051, p = .959				U = 10,683, z = –1.977, p = .048*
Used this source	45.5	24.7	24		19.4	23.0	23	
Did not use this source	45.5	24.2	1,268		32.8	30.7	1,221	
Midwife				U = 78,061, z = 1.292, p = .196				U = 57,476, z = –2.923, p = .003**
Used this source	48.1	24.8	125		24.8	26.5	122	
Did not use this source	45.3	24.2	1,167		33.4	31.0	1,122	

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

There was no association between whether participants had received prenatal and/or postpartum education and the duration of their EPing journeys. There were, however, significant associations between receiving prenatal or postpartum education or both and participants' reasons for EPing given in response to Q97: *What are the reasons you exclusively pump(ed) instead of directly nursing?*. A series of Cochran-Armitage tests of trend were performed to assess whether there was a linear trend between degree of breastfeeding education received and likelihood of selecting a specific reason for EPing. These results are displayed in Table 11.

Table 11. Results of Cochran-Armitage tests of trend to assess the associations between reasons for exclusively pumping and degree of breastfeeding education received by participants' who exclusively pumped for their first-born child(ren) (*n* = 1,627)

Reason	*p*	Descriptive statistics for significant associations % selecting this reason out of participants with that level of education (*n*)		
		No breastfeeding education (*n* = 109)	Either prenatal or postpartum (*n* = 618)	Both prenatal and postpartum (*n* = 900)
Not transferring milk well while nursing (including frustrated/crying baby, over/underactive letdown)	.003**	17.4 (19)	24.6 (152)	29.1 (262)
Just wanted to exclusively pump	.007**	15.6 (17)	8.9 (55)	7.2 (65)
Could not latch: unresolvable anatomical/health issues in the child (e.g., high palate, tube fed, swallow disorder, needed modified feeds)	.008**	7.3 (8)	5.2 (32)	9.8 (88)
Could not latch: resolvable anatomical reasons in the child (e.g., cleft palate, unresolved tongue/lip tie)	.016*	18.3 (20)	20.1 (124)	24.9 (224)
Wanted others to be able to feed child/children	.018*	24.8 (27)	20.7 (128)	17.1 (154)
Child/children in the NICU	.020*	22.0 (24)	27.2 (168)	20.1 (181)
Uncomfortable with the idea of nursing	.026*	14.7 (16)	8.6 (53)	7.3 (66)

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

The strongest linear trend concerns "not transferring milk well while nursing": as breastfeeding education increased, so did the proportion of participants selecting this reason. Since this response option somewhat used lactation jargon, it is possible that those who received breastfeeding education were better able to understand what "not transferring milk well while nursing" actually meant. This is supported by the finding that, compared to those who had not taken a prenatal class specifically about breastfeeding, those who had taken a prenatal breastfeeding class were more likely to report this reason for EPing (32.4% vs. 25.8%; 145/448 vs. 154/597), χ^2 (df = 1, n = 1,045) = 5.409, p = .020. Likewise, greater proportions of participants reported unresolvable anatomical/health issues (e.g., high palate) and resolvable anatomical issues as reasons for EPing as breastfeeding education increased. One possible explanation for these findings is that receiving breastfeeding education is associated with greater health and wellness knowledge and behaviors in general and therefore these participants may have been more likely to have sought a diagnosis for these types of ailments in their children.

That fewer participants selected "wanted others to be able to feed my child/children" and "just wanted to EP" when they had received more breastfeeding education perhaps indicates a stronger desire/intention to direct nurse by those who seek out this education. Conversely, it seems plausible that participants who were uncomfortable with the idea of nursing were less likely to seek out breastfeeding education because they had lower levels of desire and intention to direct nurse.

The relationship between breastfeeding education and selecting "child/children in the NICU" as a reason to EP has a less clear linear trend. Breaking this out into whether

participants had received prenatal or postpartum breastfeeding education, compared with participants who did not select "child/children in the NICU," fewer of those who did select this reason had received prenatal breastfeeding education (55.5% vs. 66.8%; 207/373 vs. 838/1,254), χ^2 (df = 1, n = 1,627) = 16.063, $p < .001$, perhaps due to their shorter pregnancies (less time to seek prenatal education) and/or knowledge of congenital birth defects (making the possibility of nursing unlikely). There was no significant difference in the proportion of participants who received postpartum education based on whether they EPed for their child(ren) in the NICU or not. A greater proportion of NICU EPers than non-NICU EPers had received *only* prenatal breastfeeding education (13.4% vs. 23.2%; 22/164 vs. 100/431); a larger proportion of NICU EPers had received *only* postpartum education (86.6% vs. 76.8%; 142/164 vs. 331/431), χ^2 (df = 1, n = 595) = 6.981, p = .008, perhaps reflecting, again, less time to seek prenatal education prior to birth, but also, regarding postpartum breastfeeding education, the greater opportunity for interaction with LCs while their child(ren) was in the NICU.

Receiving more breastfeeding education was also associated, as calculated with Cochran-Armitage tests of trend, with the higher frequency of reporting the emotions listed in Table 12. No emotions were reported significantly more by those with less breastfeeding education.

Table 12. Emotions significantly associated with amount of breastfeeding education (*n* = 1,370)

Emotion	*p*	% selecting this emotion out of participants with that level of education (*n*)		
		No education (*n* = 94)	Either prenatal or postpartum (*n* = 492)	Both prenatal and postpartum (*n* = 784)
Devoted	.001***	46.8 (44)	45.3 (223)	55.6 (436)
Grief	.002**	16.0 (15)	16.5 (81)	23.0 (180)
Frustrated	.006**	60.6 (57)	64.2 (316)	70.5 (553)
Resentful	.020*	33.0 (31)	32.3 (159)	39.2 (307)
Productive	.024*	43.6 (41)	49.0 (241)	53.7 (421)
Burdened	.030*	36.2 (34)	48.8 (240)	50.6 (397)
Inadequate	.042*	40.4 (38)	41.1 (202)	46.8 (367)

*$p \leq .05$, **$p \leq .01$, *** $p \leq .001$

Other than devoted and productive, these emotions are all negative. Explanations for these associations warrant further investigation since most (93.3%; 1,518/1,627) participants who EPed for the first-born child received at least some breastfeeding education. Possible avenues of exploration could include whether overly optimistic breastfeeding information, already known to be detrimental to breastfeeders' affective outcomes (e.g., Fox et al., 2015), creates unrealistic expectations of direct nursing success, as well as resentment and envy of those who are able to successfully do so. Perhaps the lack of practical and realistic problem-solving information may be behind participants' increased feelings of frustration.

5.4.4. Exclusive Pumping Information Outcomes

Chen et al. (2012) found that IFPS II respondents who breastfed for longer were more likely to receive breast pump education from classes or a support group (OR = 1.85, 95% CI [1.24, 2.76]) or from friends/relatives (OR = 1.70, [1.13, 2.55]); there was a negative association between respondents who received education from a physician or a physician's assistant and breastfeeding duration (OR = 0.58, [0.36, 0.93]). No positive or negative associations could be identified between breastfeeding duration and receiving breast pump education from nurses, LCs, nutritionists, or mass media. Similarly, Qi et al. (2014) found that those who learned how to pump from a personal source (e.g., friend, LC), as opposed to an impersonal source (e.g., manual, video), had a lower risk of experiencing breast pump-related problems (hazard ratio = 0.77, [0.61, 0.96]). Neither Chen et al. (2012) or Qi et al. (2014) examined outcomes when information was received from an interactive online source (i.e., social media).

More recently, Sutter et al. (2018) found that those who had received breast pump information and support from professionals, peers, or friends and/or relatives were no more or less likely (compared to exclusive formula feeding) to be nursing exclusively, feeding some expressed milk, or breastfeeding and formula feeding (combined feeding) at 6 weeks postpartum. In other words, in this study, the source of breast pump information and support did not affect breastfeeding outcomes.

BWN study participants experienced a variety of outcomes as a result of the usefulness of the EPing information they received. For many, finding information online represented a watershed moment for them in their EPing journey:

> *I started researching online and found one website, [I] think exclusivelypumping.com, and started from there. That had quite a bit of good*

information. But then I found the Facebook group and that was a life saver. (R1687)

If I hadn't stumbled onto that Facebook group, I think I would have [been] miserable for a bit longer than I was. I was getting my shit sorted out but that group really was a game changer for me. (R411)

Positive affective outcomes resulted from finding information about EPing. For example:

With little to no guidance from healthcare professionals, I scoured the internet for resources on nursing and pumping. I finally stumbled upon www.exclusivepumping.com, and this was everything: A community for moms who EP. I never knew I could sustain my baby with breast milk on pumping alone. When I learned this, I was relieved. (R887)

Participants described learning about not only the practical/logistical/clinical side of EPing from online support groups, but also about others' experiences:

I have learned the majority of my knowledge through Facebook groups. It's quick and convenient and there are women going through what I'm going through at the same time. It's not just learned knowledge but experience. I'm am very pleased with the information I've gathered so far. (R50)

A few participants felt that the information received and knowledge gained as a result of their participation in online support groups built expertise, which they could then share with other EPers:

A couple months later (about 4 months after birth), I finally got referred to "Exclusively Pumping Moms - Private Group", and that's where my knowledge and appreciation for pumping really flourished. … I now feel like a pro about pumping and I'm so active in the group, day and night, every single day, trying to help fellow moms. These Facebook groups turned out to be invaluable resources and I'm not sure I ever would've succeeded without them. (R2390)

Some participants even shared that they were teaching their HCPs about EPing:

I was teaching my OB [obstetrician] and my Pediatrician about what I was doing -- they were both very supportive but relatively uneducated about the topic [EPing]. (R1453)

I trained [my pediatrician] to respect Exclusive Pumping as a viable option for feeding baby. Now, as opposed to the two question option on the standard form … of either nursing, or formula fed, I have … opened up the eyes of my pediatrician to another very viable option. They used to flinch when I said I exclusively

> *pumped breast milk, now they nod and smile in a way of understanding. That girl I helped [who has the same pediatrician] … receives NONE of the flak that I used to when I first started on my journey from that pediatrician. So for that I am thrilled. (R411)*

Many participants expressed that they would not have been as successful with EPing without the information they received in online support groups. For example:

> *Luckily I stumbled across some of the Facebook groups for EPers and within hours of becoming of a member of those groups I was provided more helpful information than everything else combined. Without these groups of knowledgeable women sharing their experiences, I would not have been successful with EPing. (R200)*

Conversely, LCs received the most ire from participants regarding the EPing information they provided. Some participants felt that the failure by LCs and HCPs to provide the right information (e.g., length and frequency of pump sessions, that EPing is not sustainable) directly impacted their infant feeding outcomes:

> *Lactation consultants should be more knowledgeable about it as well as pediatricians and ob [obstetrician] doctors. If I would have known about it after the birth of my first son we might not have had to resort to formula so soon. (R2186)*

Having that information would have made EPing easier:

> *I really wish these lactation consultants would've told me about all the things and amazing accessories that make pumping so much easier. … I also wish they would've told you about the different type of pumps. … All of these things make pumping so much easier and more enjoyable and no one ever told me about them. I had to hear about them from other exclusively pumping moms on a Facebook support group. The worst part is the lactation consultants never even told me that groups like this existed or where to find them. (R1532)*

Not receiving useful information from LCs had profound emotional consequences for some participants. In several of their responses, the vitriol concerning the lack of information provided by LCs was palpable:

> *I wish that LACTATION CONSULTANTS in particular, gave out more useful information to women. Both that I saw in 2 different NICUs made me feel like a failure, or kept insisting I put my baby to breast. Putting him to breast did not*

magically make him have the ability to swallow. Quite frankly they left a lasting, and extremely negative, view of that profession. (R399)

Not ever going to a lactation consultant [would have made EPing better]. They gave terrible EPing advice!!!! (R1556)

Lastly, poor EPing information experiences with LCs also had a measurable quantitative outcome that must be highlighted. A Cochran-Armitage test of trend showed a statistically significant linear trend ($p < .001$) between how useful a participant rated the EPing information they received from an LC and whether they sought help from a medical professional if they had a breast health problem related to EPing. While 49.9% (168/337) of those that rated EPing information from an LC as "very useful" sought medical help for a breast/nipple health problem, only 33.7% (86/225) of those rating LC EPing information as "not at all useful" sought this help. It is concerning to consider that anyone might hesitate to seek medical help because of previous poor information experiences—even more so when the lack of medical attention for a breastfeeding-related breast health problem potentially impacts a breastfeeder's ability to produce milk, feed their baby, and fulfil their breastfeeding intentions. It is critical that this finding is explored more thoroughly in future research.

5.5. Discussion

EPers' information experiences are characterized by an overall lack of information from HCPs and LCs and a perception of high-quality information and support from online sources, especially online support groups. Granted, recruitment for this study was conducted predominantly through these very same sites; however, for the most part, participants only joined these groups after giving birth and after having already experienced an EPing information desert. When participants first started EPing, the most

important information concerned the basic logistics of pumping: how often and how long to pump, how to maintain supply, and how to make pumping more comfortable. However, as reported in Table 5, some types of EPing information were more important to different groups of participants. Patterns in these findings reflect those of previous studies on breastfeeding in general: for example, those with lower household incomes are less likely to have as much (or, in the United States, any) parental leave following childbirth (Horowitz et al., 2017) (workplace: microsystem; social values and cultural norms: inner macrosystem; public policy, laws, economic and political systems: outer macrosystem) and therefore information on how to pump outside the house and store and heat up milk might be a more immediate need. Similarly, these breastfeeders may not have as much social and financial support to be able to find others to look after their child while they pump (microsystem). Previous research reveals higher formula-feeding rates in communities of color (Li et al., 2019) (cultural norms as a result of centuries of oppressive social history: inner and outer macrosystems); therefore, it may not be surprising that these participants considered information about bottles and nipples and how to supplement with formula more important.

Furthermore, those EPing for first-born children, logically, have less infant feeding experience (intrapersonal) and therefore value information pertaining to logistical questions, such as how much and how often to feed as well as how to supplement with formula. The types of information that were more important to participants who EPed for the first time for their second child or later may be informed by their previous breastfeeding experiences (intrapersonal; likely influenced by multiple systems)—

experiences they may aspire to (e.g., getting "back to the breast") or aim to avoid experiencing again (e.g., not maintaining supply).

Increased sociodemographic privilege—here, race/ethnicity, household income, and education level—was associated with being more likely to receive breastfeeding education. While the degree of breastfeeding education received was associated with increased perceived knowledge about nursing-related topics, it was not significantly associated with perceived knowledge of how to exclusively pump. However, given that breastfeeding education in itself does not improve breastfeeding outcomes (Balogun et al., 2016; Lumbiganon et al., 2016), increased perceived knowledge of nursing did not likely have any bearing on whether participants nursed, EPed, and/or formula fed. Nevertheless, the fact that other circumstances, such as reasons for EPing, and outcomes, like reporting certain negative emotions, are associated with the degree of breastfeeding education is important: cognitive, behavioral, and affective breastfeeding outcomes as a result of increased education should not be dismissed. The fact that affective outcomes were, on the whole, *worse* for *BWN* study participants who had *more* breastfeeding education is a novel finding and one that warrants further investigation.

An important distinction between education about nursing and education about EPing should also be made. It is pretty safe to assume that *BWN* study participants were generally aware of nursing at the breast prior to receiving (or not) any breastfeeding education—they knew enough to know that they had gaps in their knowledge, where to seek information to fill them, and the terms/vocabulary to be able to initiate an information search. In stark contrast, many were incognizant that EPing even existed—and did not even know the right terminology to streamline their information seeking.

Participants had to "stumble across" the term serendipitously or be identified by proxies as having an EPing information need. Therefore, while breastfeeding education that only includes information about nursing serves to increase individuals' knowledge, education that includes information about EPing would serve to eliminate many individuals' incognizance. St. Jean (2017) found that incognizance has "potentially devastating consequences" (p. 316); for *BWN* study participants, these consequences ranged from negative affective outcomes to a lesser degree of human milk feeding, both of which not only affected the participant but also their child(ren), family, and those in their wider micro- and exosystems. Nevertheless, *BWN* study participants overcame their incognizance; it is impossible know how many caregivers were not able to so and therefore did not breastfeed by way of EPing as a result.

Given the deleterious consequences of EPing-related incognizance, exclusion of or ignorance about EPing among HCPs and LCs is highly concerning. Lactation education in general, but specifically education about pumping, is severely lacking (education system: outer macrosystem). For example, Osband et al. (2011) found that pediatric residents received only approximately 9 hours of breastfeeding education over the course of a 3-year medical residency program. It is unclear what amount of pumping and EPing education, if any, LCs receive. I can report from personal experience that, as part of the 45-hour Certified Lactation Counselor (CLC) course (www.alpp.org), I only recall approximately 30 minutes dedicated to milk expression. CAPPA, the Childbirth and Postpartum Professional Association (cappa.net), will be adding a section to their Certified Lactation Educator manual and training to support EPing parents, including more information on relying on a pump for milk supply (K. Bepler, personal

communication, May 15, 2020). No formal qualification or certification exists to demonstrate knowledge of milk expression. While CAPPA's openness to change reflects ongoing changes to the lactation landscape (chronosystem), the existing lack of pumping knowledge of LCs and HCPs reflects the prevailing cultural norms and social values (inner macrosystem). Unfortunately, existing cultural norms and social values that influence LCs knowledge translate into EPers feeling unsupported. The support needs of *BWN* study participants are addressed in the next chapter. The role of online support groups, as well as others providing practical and emotional support, is also examined in depth.

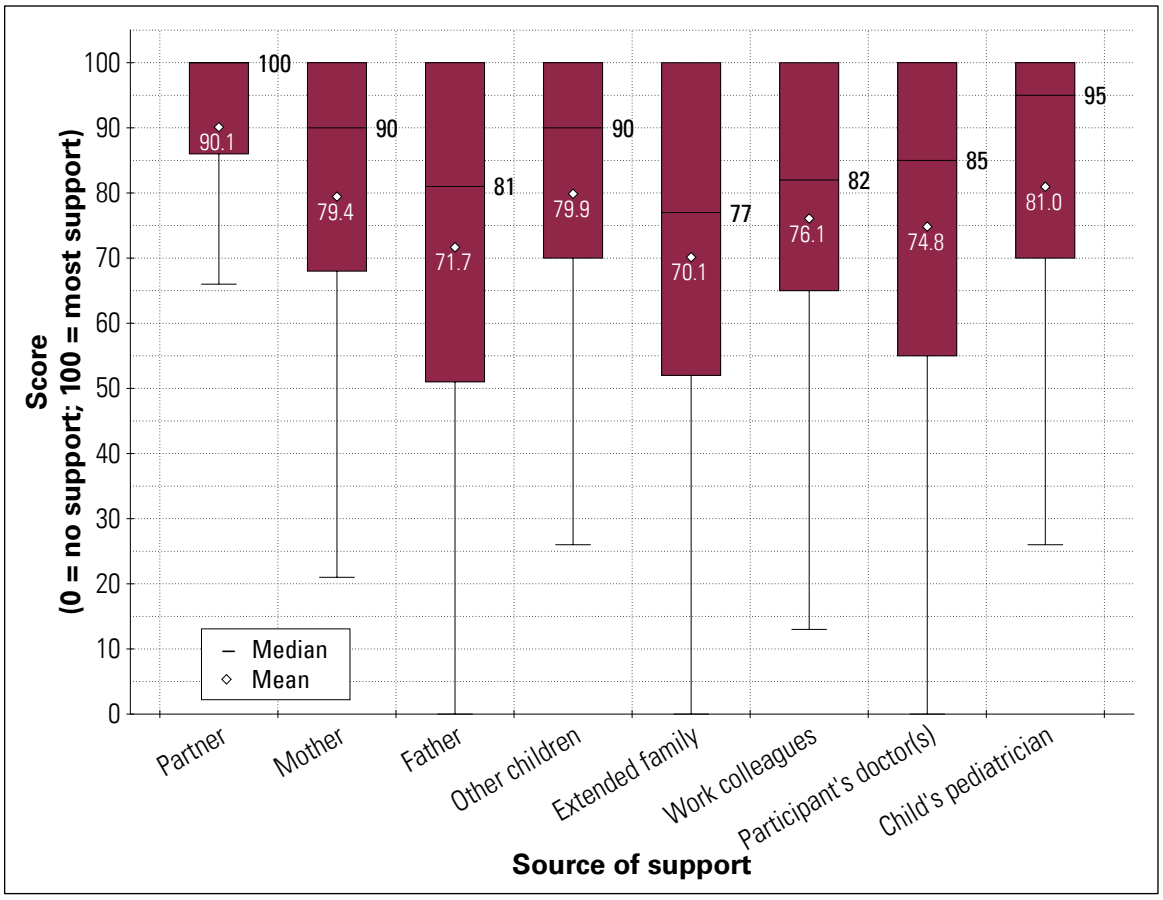
Chapter 6. *"I got the best support from online support groups, but I needed lactation consultants to be more encouraging."*
Domain 4: Exclusive Pumpers' Experiences of Support

Social support has often been defined by the functions it serves: emotional (comfort, empathy, love, trust, and caring); social integration or network (belonging to groups who share interests, concerns, and/or goals); esteem (builds up an individual's confidence and sense of worth); tangible (physical assistance with tasks and/or provides resources); and informational (provides helpful advice, additional perspectives, and/or guidance on how to approach a problem) (Albrecht & Goldsmith, 2003; Berkman & Glass, 2000; Cutrona & Russell, 1990; Eichhorn, 2008). In this dissertation and my own work as an LC, I have condensed these five elements into three: practical support, which replaces tangible; informational support; and emotional support, which encompasses both esteem and emotional support. Being part of a community or network (i.e., being socially integrated and receiving network support) can lead to receiving multiple types of support; for example, emotional support may be bolstered by a sense of belonging and a community fundraiser might provide practical support. Therefore, social integration and network support is not included in the concept of support used in this dissertation. Individuals' communities and networks are not considered as a *type* of support, but rather a *source* of support. Informational support was examined in Chapter 6; this chapter addresses practical and emotional support. Consequently, when not specified, "support" in this chapter refers to these two kinds.

As Figure 24 illustrates, *BWN* participants' reported levels of support varied across different sources, with partners scoring a mean of 90.1 (median: 100; *SD* = 17.9)

out of 100, where zero was “no support at all” and 100 was “the most supportive you could possibly imagine.”

Figure 24. Responses to Q125: *How much do or did family and friends support your exclusive pumping (e.g., emotional/mental support, encouragement, helping with your child/children while you pump)? (0 is no support at all and 100 is the most supportive you could possibly imagine)*



Notes. Number of participants providing a response for each source of support varied:

- Partner: *n* = 1,670
- Mother: *n* = 1,473
- Father: *n* = 964
- Other children: *n* = 398
- Extended family: *n* = 1,030
- Work colleagues: *n* = 864
- Participant’s doctor(s): *n* = 1,111
- Child’s pediatrician: *n* = 1,366

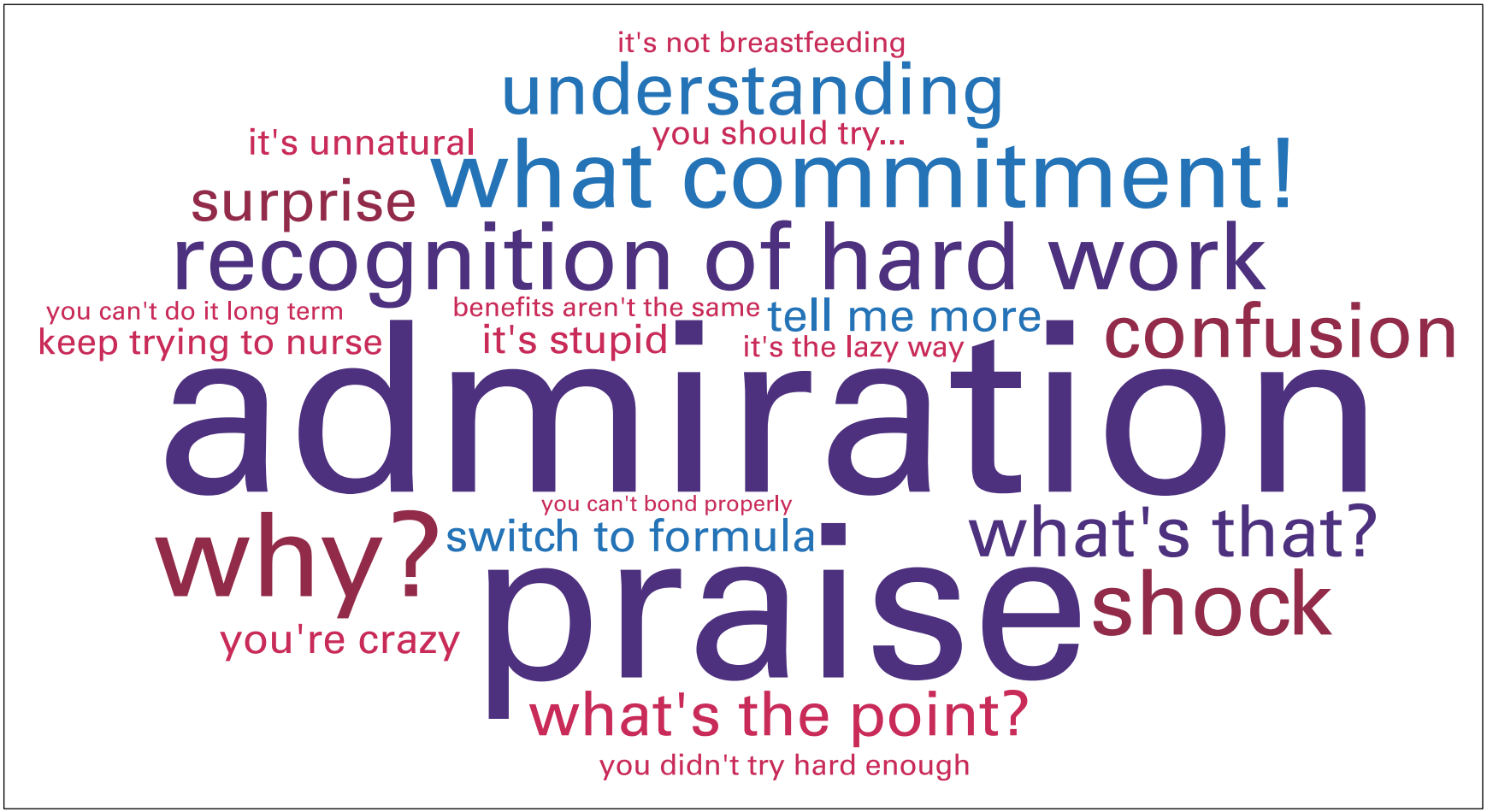
Throughout their open-ended responses, participants identified those sources of support that were most valuable to them—as well as those that they felt ought to have been but

were not. Thus, the themes in this chapter address the support participants received from their partner, family, friends, LCs, online support groups, and their workplace. However, before exploring the support *BWN* study participants received from specific sources, it is worth examining the overall reactions that they experienced when they told others that they were EPing, given that other people's reactions can influence an individuals' overall sense of support for their decisions and actions.

6.1. *"What's exclusive pumping? Why don't you just latch? Or formula feed?"* Others' Reactions to Participants' Exclusive Pumping

No study appears to have examined the reactions that admissions of milk expression, especially EPing, elicits from partners/spouses, family and friends, HCPs, LCs, coworkers, and society in general, yet every caregiver—and those identified as mothers especially—is frequently asked how and what their infant is eating. Most participants experienced a mix of positive and negative reactions to their EPing; the most common reactions participants experienced are illustrated in Figure 25.

Figure 25. Word cloud of the most prevalent responses from *Q126: What reactions have you experienced when you have told others that you are/were exclusively pumping?*



Many participants received positive reactions to their EPing, the most common being praise, pride, and admiration, although sometimes this surprised participants. For example:

> *A lot of people are impressed. Moms who breastfeed [nurse] tell me how hard they remember pumping being and they don't think they would have been able to do what I am doing. (R320)*

> *I was surprised to find that most people are not as judgmental of my decision to exclusively pump when I tell them that I do so. My sister-in-law who breastfeeds religiously was so much more supportive than I anticipated. Her reaction was pride in my decision to continue offering my daughter breastmilk and for sticking with it. (R395)*

> *I have been incredibly lucky, in that most people I tell that I am EPing have been incredibly supportive. People think I am dedicated to my son. They say they couldn't do what I am doing (in a positive way because I have continued pumping through several bouts of mastitis and they feel they would have quit by now). (R226)*

Many also received validation for the hard work and time commitment involved in EPing, even if sometimes it felt like a criticism:

> *Some think it's crazy because of how hard it is and how much time it takes. But most think very highly of the decision to provide breast milk for the baby even when nursing didn't work out. My children's pediatrician thinks it takes a "supermom" to be able to do that. (R368)*

> *I can't believe you EP! That's such hard work. People are always saying it's too much work. But I don't think so. Plus it's for my baby!! (R2221)*

In contradiction, some participants were told that it was the "easy way out" or that they were lazy:

> *Basically a lot of "I wish I had that kind of time, must be nice." People outside of my family seemed to think I was lazy and just didn't want to try feeding my daughter "for real." (R1572)*

> *It was looked at as taboo by mothers who nursed. Looked down upon like I was just too lazy to feed so I took the easy way out. (R1596)*

A very common reaction was asking participants about EPing. This took two forms: marginally more commonly reported was others questioning why, but knowing what EPing is. This was often accompanied with a comment about infant formula, something participants were frequently told to use instead of continuing to EP. For example:

> *Most people don't understand why, mostly, someone would choose to pump for so long if they really don't have to. (R366)*
>
> *Other people don't understand and think I should just give my little one formula. (R257)*
>
> *Why? Give up. Formula feed. Don't stress yourself out. It's not worth it. (R1454)*
>
> *You're crazy, just buy formula, why bother, there's no health benefits after they're past that newborn stage. (R1497)*

The other form of questioning or comments were related to not knowing much about EPing itself:

> *People don't really know much about it. They have opinions whether it be "keeping trying to nurse" or "just give formula." (R66)*
>
> *Most were confused and didn't really understand what I was doing … Or that when I say I have to pump I HAVE TO PUMP! (R202)*
>
> *I think a lot of people just don't know about exclusive pumping. But once I explain it and they get it, I think they admire it because they realize what a commitment it is. (R1455)*
>
> *Usually people are confused, they don't know what it is. When I explain, if they are a mom, they usually start offering tips to getting baby to latch. Others ask why not switch to formula. Others are interested and ask for more information. Most people just ask in passing what the baby eats and I say breast milk and there are no further questions about how. (R1624)*

Lastly, this participant's description of the reactions they received demonstrate the impact that others' questions and comments can have:

> *I shared a picture of me bottle feeding my child. I thought it captured a sweet moment and was not expecting the response I received. "Is this out of the ordinary? I thought you were nursing." I explained we were having trouble*

nursing and that I was also pumping. I heard, "well hopefully she'll learn to eat the right way." I was in tears after hearing such an insensitive and unsupportive comment. (This was before I officially decided to EP)

At 7 months postpartum, I was asked, "Don't you feel like you're missing out on bonding time with your daughter because you aren't nursing?" I was initially taken aback by the question, but realized that it was not asked in a malicious way. The short answer is no, I don't feel like I'm missing out. I bond with my daughter while feeding her a bottle and in so many other ways; we definitely have a special bond. Nursing was not a positive experience for us. I like that I have my pumping schedule and my daughter has her feeding schedule; I can adjust my schedule independent of when she needs to eat.

Some people are really supportive and impressed that I'm still EPing after 9 months. One person said "it's not for the faint of heart."

6.2. *"My husband was great, but he could have been better."* Father of the Child; Spouses and Partners of the Breastfeeder[17]

Active support from a partner is associated with increased breastfeeding initiation and duration (e.g., Agunbiade & Ogunleye, 2012; Cernadas et al., 2003; Freed et al., 1992; Pisacane et al., 2005; Premberg et al., 2008; Yokoyama & Ooki, 2004). Merely being married is also positively associated with breastfeeding initiation, duration, and exclusivity (Callen & Pinelli, 2004; Clayton et al., 2013; Demirci et al., 2013; Fein et al., 2008; Groër, 2005; Hackman et al., 2016; Li et al., 2008; Pineda, 2011; Stuebe et al., 2014). However, being partnered is not the sole determinant of a partner's or father's role in infant feeding decisions, as demonstrated by the rich and diverse literature available on this topic.

[17] The terms *father* and *paternal* reflect the language used in the literature but does not reflect my own preferred terminology. Where possible, *partner* is used to mean the person with whom the breastfeeder is in a committed relationship, unless specifically denoting a legal marriage is pertinent, in which case *spouse* is used. Most participants referred to this person as their *husband*.

6.2.1. Good Support

In their integrative review, Davidson and Ollerton (2020) categorized supportive behaviors as:

> *Knowledge*: learning and applying breastfeeding knowledge, including the ability to 'troubleshoot' breastfeeding problems;
>
> *Help*: tangible, practical help including household chores, care of baby/other children/mother, and practical help during breastfeeding sessions;
>
> *Encouragement*: showing appreciation of the woman and the fact she is breastfeeding and expressing a wish for her to continue breastfeeding;
>
> *Responsiveness*: sensitivity to the woman's needs, respect for her decisions, promoting self-autonomy/efficacy, co-parenting and providing *knowledge/help/encouragement* in a manner acceptable to the woman.
>
> (p. e19)

They found that responsive support was associated with universally positive impacts on breastfeeding initiation, exclusivity, and duration. Responsiveness appears to be the key to partner breastfeeding support: knowledge, help, and encouragement only feels like support if done so in a way that is sensitive to the needs of the breastfeeder (e.g., Rempel et al., 2017). The breastfeeder and partner need to work as a team; feeling part of a "breastfeeding team" was expressed by fathers/partners themselves in several studies (deMontigny et al., 2018; Rempel & Rempel, 2011).

Responsiveness undoubtedly affects the *perception* of support received from the breastfeeder's partner, which has also been found to be critical to breastfeeding success (Arora et al., 2000; Freed et al., 1993; Tsai, 2014). For example, the most common reason for initiating bottle feeding given by mothers in Arora et al.'s (2017) study was the perceived, not actual, support for breastfeeding. Breastfeeders may underestimate how supportive their partners actually are, as Freed et al. (1993) found that fathers were actually more favorable towards breastfeeding than their partners predicted.

While few *BWN* study participants mentioned their partners having knowledge about breastfeeding, some indicated that their partners' opinions about breastfeeding—both nursing and pumping—influenced their breastfeeding decisions:

> *I never wanted to breastfeed but my husband pushed relentlessly, I agreed but I wanted to EP. (R1352)*
>
> *My son wouldn't go back to the nipple easily. I was willing to work on it. My husband was around a lot and didn't like his crying. So I pump. (R2130)*
>
> *For me, it [choosing to EP] was a combination of several things, including my husband wanting to feed her. (R2028)*
>
> *Husband requested we try EPing for a couple of days to see if helped improve baby's mood and feeding, and stress on me. He also wanted to monitor how much baby was eating due to concerns baby not getting enough from nursing. Ultimately pumping was successful, baby and mommy were happier, and we decided to keep it up. (R2011)*

Participants often wrote in ways that indicated joint decision making, thus being part of a breastfeeding team:

> *Myself and my husband really wanted us to be able to breast feed and to give our child breastmilk for as long as possible. When she wouldn't latch while we were in the hospital we decided to exclusively pump as it was easier than trying to get her on the breast. (R574)*
>
> *My husband and I want to be equal parents. We are also doing shared parental leave. (R880)*
>
> *We were also stressed with her weight gain and if she was getting enough. So then, my husband and I decided it would be best for everyone to just pump and feed our girl. (R1619)*
>
> *Another reason was my older 2 yr old who would be jealous when I nursed so my husband and I decided that I would express the milk and he will feed the child. (R1657)*

Other participants expressed their own desire for their partners to be involved in feeding:

> *I always wanted my children to have the best that I could give them, but I knew that I wanted my husband to be as involved in the feeding of our children as possible. (R1584)*

> *I wanted my husband involved as much as I was. I also knew that I value my sleep so having my husband get up in the middle of the night so I could pump would benefit everyone. (R988)*

The desire for partners to be involved often stemmed from wanting their partners to bond with their child through feeding, unsurprising given that this benefit of EPing was highly cherished by most participants. For example:

> *I think it's [nursing] mildly selfish and I also think it doesn't allow for mutual bonding between father and child. I wanted my husband not only to be able to share the sweet moments but also to have to get up in the middle of the night with our daughter (he can suffer the lack of sleep just like I do). (R2233)*

> *I pump and my husband typically bottle feeds, providing a father/son bond that's helped me become ok with our situation. (R1821)*

Most participants lauded their partners' contributions to their EPing journey, much of which came in the form of practical help. Often this came in the form of helping with infant feeding directly, about which many expressed positive outcomes:

> *EPing also allowed my husband to share in the feeding responsibility and allowed for me to take a break from the sudden lifestyle change of having a child, and from recovery, long enough to take a shower and detach myself from constantly caring for the baby on my own for my own sanity. (R722)*

> *My husband could help feed them, so I felt less burdened by being their primary food source. (R2142)*

> *I was constantly mad at my husband as I felt like he wasn't participating. Once I made the decision to exclusively pump, my son was happier, I was happier and my husband was happier. We got into a nice routine, where my husband would do a feeding and I would pump at the same time. We were in this together, which made me feel less alone and more grounded. (R1486)*

Partners also provided support with caring for children and household tasks, as well as washing pumping and feeding equipment:

> *If not for my husband and his support, I would not have been able to pump for my daughter for this long. We're going on the 9th month and he's always there for me to vent [to], clean pumping supplies and to get bottles together. I think without him it would have been much too overwhelming and I probably would have quit. (R694)*

> *We committed to pumping and my husband helped make it possible by sanitizing the pump parts. Now it's just part of our routine. (R1588)*

Partner support for the participant's choice to stop EPing was also highly valued:

> *My husband saw how much I hated doing it and resented it and him for the fact that he didn't have to. He told me time and time again that it was totally up to me if I wanted to continue or stop, he wasn't by any means expecting me to keep this up as he saw how miserable it made me. (R1214)*

> *My mom and husband tell me they're proud of me and if I ever want to quit, I can and it's my decision because they know how hard I work for little reward since I don't produce much. (R2083)*

Once again, routine and structure were important to participants and partners became part of those routines:

> *After we came home from the hospital, I was in such a routine of pumping and having my husband able to help bottle feed one of them just became part of our routine. I pumped, we fed, repeat. (R2160)*

> *Then I became used to being able to have my husband feed her, being able to take her out and not have to figure the logistics of breastfeeding, and not being tied down to having to breastfeed on demand. (R2066)*

Some participants mentioned their partners struggling with not being able to help, especially in relation to problems with direct nursing. That participants were aware of their partners' struggles—and that those struggles were impactful enough that they later reported them in this study—suggests participants perceived a high level of willingness in their partners to provide support. Switching to EPing gave partners more ways to help out. For example:

> *My entire family … is always supportive and my husband pretty much hung the moon, he takes care of our son so I can pump on time and helps remind me when it's time to pump. (R26)*

> *Being on demand 24/7 while recovering from a C-section, watching my husband struggle because he couldn't help me, dealing with flat nipples and using a shield at every feeding – I was worn out. We started pumping once a day so he could feed her and I could rest. (R2309)*

Once I saw how much more at ease everyone was with me EPing, I made the switch. I wasn't crying in pain, our baby wasn't crying in frustration & my husband wasn't trying to console us both. EP life was easy for us and it worked. (R243)

My husband was amazing: grateful, helpful, in awe, supportive, etc etc. He wanted me to only EP and stop trying to nurse. He stayed up through many 3am clogged duct fiascos to keep me company and help me in any way possible. (R1478)

Partners were also important sources of encouragement and cheerleading; participants complimented their partners on their supportiveness without specifically providing examples of what form that support might take:

My husband has been extremely supportive. When I don't feel like pumping he tries to cheer me up by saying things like you are not a milk machine. (R1532)

All in all, EPing was hard work, but I had a great support system from my husband that allowed me to really be able to pump and continue as long as I did. (R1477)

So I decided to give EPing a shot. It's a lot of work, but I had my spouse and family's support to make it workable so I went ahead with it. (R1226)

I am nearly 5 months into exclusive pumping and here are my tips: …

9. Family support: my husband and mother in law were a huge help in the beginning, and my husband helps now when I pump for the night session. Having family members who will support you emotionally and help as well makes a big difference. I got mastitis 6 weeks after my daughter was born and having support makes a huge difference. (R1136)

I've had a great [EPing] journey and lots of support from my dear husband. He's my biggest fan. (R521)

My husband is so thankful and supportive of this journey. We couldn't do it if we weren't doing it together. EPing is a family adventure. (R2149)

"Thanks for all your hard work in feeding our son"—husband. (R1237)

6.2.2. Poor Support

Multiple factors seem to contribute to a partner's lack of support: simply not understanding the importance of human milk; feeling like they will not be able to bond

with their child; feeling inadequate, powerless, or useless; being separated from their partner by the child or being excluded; not wanting breastfeeding to interfere with sex; and a desire for their partner to maintain their pre-pregnancy breast aesthetics (Agunbiade & Ogunleye, 2012; Brown & Davies, 2014; Freed et al., 1992; Jordan & Wall, 1990; Kessler et al., 1995). Breastfeeders also report that their partner not taking adequate responsibility for childrearing and/or household responsibilities contributes to breastfeeding cessation (Haider et al., 1997; Susin & Giugliani, 2008; Yokoyama & Ooki, 2004).

Lack of partner support was not common among *BWN* study participants; perhaps because the study sample skewed towards those who EPed for extended periods of time, those who wanted to EP but did not or those who only did so for a short time due to lack of partner support were not recruited. Hearteningly, when asked Q139: *What would have made your experience of EPing* ***worse?***, "not having support from my partner/husband/spouse" was one of the most common answers, demonstrating the high level of support participants, in general, felt their partner provided.

When participants did not have good partner support, a variety of reasons were revealed. For some, the lack of support was simply because their partner was not able to be there in person:

> *Also, would have helped if husband hadn't been deployed since baby was 4 months old! (R545)*
>
> *I was uncomfortable with nursing in public and my husband is deployed, so I have no support at home, so EPing has been the easiest way for me to feed my baby. (R2090)*
>
> *My husband was on second shift so I had no help most days. After coming home from working all day and being exhausted, I just wanted some help and support but I was basically a single mom for the first two years. (R2054)*

One participant specified that the lack of their partner's lack of support was not for breastfeeding in general or EPing specifically, but only for the participant's effort to establish nursing:

> *I also didn't have support from my husband, who didn't understand why I wanted to nurse and was frustrated that I was putting myself and the baby through so much "unneeded drama" when EPing "worked just fine." Without his support, and with my baby crying at the breast and also beginning to cut teeth, I finally gave up on my dreams of nursing. (R1478)*

A few partners struggled to understand that the hard work involved in EPing was not a reason to stop. This participant described:

> *During that time, I had my spouse, my parents, and sister try to talk me out of EPing. And I get it, they saw what a struggle it was to keep going through that, and how much pain I was in for a few days. But I also wish they had understood why I felt I needed to keep going. It's not that they aren't supportive, because they have been in many ways, especially my spouse dealing with both kids while I take the time and space to pump what feels like all the time. But I do, at times, feel like everyone is ready to jump on the first little hiccup I talk about and use that as an excuse for why I should quit EPing. I know they hear me complain about it at times because EPing is *HARD* *WORK*! But, I wish that I could express that *and* still have them understand that I care so deeply about providing that "liquid gold" for my boys. ... I just need to be able to vent about EPing without feeling like it'll be one more reason to be used against me. (R1488)*

Other participants' partners struggled to understand their desire to avoid formula:

> *My husband has commented that its good, but he has also suggested formula to help her sleep better. (R45)*

> *Husband warmed over time. All [everyone] just felt it was unnecessary and that formula had been good enough for us. (R275)*

Like this last participant's partner, some partners were initially unsupportive, but, over time, came to understand the importance of EPing, either for the participant, their child, or both:

> *My husband didn't agree with it at first due to how stressed it made me when going through baby blues and trying to find a balance pumping and caring for my baby. However, once he realised how important it was to me and how beneficial it was for our baby, he became much more supportive. (R543)*

At first my husband wasn't on board with me pumping. He told me why can't I just feed the baby? It made me feel like I wasn't good enough to feed my baby so I almost gave up. But I absolutely did not want to give my son formula so despite the fact that my husband was frustrated by it I kept pumping. Now he understands why I'm doing it and is a lot more supportive. He helps watch the kids while I pump when he's home so I don't have to be so stressed out. (R250)

The most common reason participants perceived lack of support from their partners concerned the time it took to pump:

My partner was generally supportive but struggled with the amount of time and schedule I needed for pumping and how it impacted our lives. (R827)

I feel that my husband wished I would just switch to formula because it was time consuming for me to pump & would mean he needed to care for our 2 kids while I pumped. It also made it difficult to go places for long periods of time because I'd need to take the pump & an ice pack and find a place, etc. He would make comments asking "how long are you gonna be doing this" and "you need to pump again already?" It was very discouraging. (R53)

Other partners were unhappy with the burden that EPing placed on them:

My husband is supportive most of the time, but he gets extremely agitated when I have to pump and my older son is going crazy. If my daughter is crying and my son is acting up, which is a totally normal scenario, he gets very anxious. He told me once that I have to stop pumping because it was "too much." He did almost pressure me at that time. (R946)

My family has been very supportive of pumping, but it's hard on my husband. He has to take on more direct care so I can pump. He often asks me to stop pumping. (R917)

Husband helped with washing pump parts. … Husband often was negative about it instead of supportive/positive, or would complain while washing pump parts. (R2326)

Some participants reported that their partners provided no practical support, such as night feedings/diaper changes, looking after their child(ren) while the participant was pumping, or washing bottles:

More support from my family and especially my husband [would have made EPing better]. I did all of the night feedings and diaper changes and pumped which meant I never slept. I always had to wash everything when I was done … No one helped take care of the baby or help me with equipment. (R1549)

> *Also more support from my husband [would have made EPing better]. I primarily fed and pump my child, I do all the washing of parts and bottles, and all storage concerns. I wanted to buy a pump for work since we got my main one through insurance and he said no... won't I just quit soon? I wanted a deep freezer for storage and he told me to just back off. We have milk now kept at my parents and his parents as our freezer has filled up. (R1544)*

A recurrent answer to Q138: *What would have made your experience of EPing* ***better?*** was a desire for their partner to be more understanding and appreciative of EPing, even if they were otherwise supportive:

> *My husband still doesn't understand how important it is to me. He still sees what all I go through, deal with, and the pain and wonders if it is worth it. (R457)*

> *If my husband showed more appreciation for what I do for our son I'd feel better. I know he supports this but it would be nice to hear what a great mom I am for continuing on or that he knows how hard I work for this. (R1829)*

> *Also just basic encouragement or just acknowledging from my spouse that what I'm doing is hard and a sacrifice. Just a thank you would be kind. (R1793)*

> *More support from my husband. He was relatively supportive, but on days I was overly stressed about EPing he would often suggest that I quit instead of being encouraging. (R725)*

> *My partner having a better understanding of what it takes to produce milk [would have made EPing better]. He would get frustrated if our supply got low. (R1174)*

Lastly, a few participants had partners who were cruel and dismissive:

> *My husband sees it as "time I can be on my phone" and doesn't understand the stress, but also gets upset if we are going to go somewhere and I have to take 20 minutes to pump first. (R915)*

> *My husband has been supportive but has also at times shown frustration if I spill milk or eat something that upsets the baby's stomach. (R883)*

> *Husband says I didn't try hard enough with breastfeeding [nursing]. (R96)*

> *Hubby laughs when I cry over spilled milk. (R1152)*

6.3. *"My mom was one of my biggest supporters. The in-laws? Not so much."* Close Family Members

6.3.1. Grandmothers of the Child

Like fathers/partners, grandmothers of the child can help or hinder breastfeeding initiation, duration, and exclusivity (Agunbiade & Ogunleye, 2012; Arora et al., 2000; Bentley et al., 1999, 2003; Berkule-Silberman et al., 2010; Cox et al., 2017; Grassley & Eschiti, 2008; Haider et al., 1997; Heinig et al., 2009; Ingram & Johnson, 2004; Karmacharya et al., 2017; Raffle et al., 2011; Safon et al., 2017; Scott et al., 2001). In one study, 29% of respondents reported that the person whose "opinion mattered most to her" was her own mother (i.e., the child's maternal grandmother) (Kessler et al., 1995). Particularly in low- and middle-income countries, mothers-in-law of the breastfeeder appear to have significant influence, perhaps because of the increased female subservience and hierarchical family structures in those countries (Nigeria: Agunbiade & Ogunleye, 2012; Tanzania: Falnes et al., 2011; Ghana: Gupta et al., 2015; Bangladesh: Haider et al., 1997; India: Islam et al., 2017; Nepal: Masvie, 2006). Negin et al. (2016) pointedly note that "most health programs target the individual person most directly involved in the target behaviour—usually new mothers …—without a commensurate understanding of who else influences those decisions" (p. 2). They call for breastfeeding education and awareness programs to pay particular attention to the role of mothers-in-law.

6.3.1.1. Participants' Own Mothers

BWN study participants' own mothers did not score as highly as partners in the quantitative measure of support—in fact, participants' children's pediatricians had higher average (mean and median) scores (see Figure 24). Some participants' mothers did not

seem to understand why nursing might not have been an option, which could be interpreted as poor emotional support:

> *People seem dismissive of it, and my mother has often suggested I "just go back to nursing." (R915)*

> *They only reaction the I got was from my mother and mother in law keep asking if I was trying to breastfeed directly and that went on for about 3 months. Now my mom is keep asking me about what I'm going to do with all of the breast milk that I have in my freezer, and suggesting that I should drop a pump (I currently pump 3 times a day) and start using what is in my freezer so I don't waste it. (R1326)*

However, the majority of participants described positive support from their own mothers. For example:

> *It [EPing] had hard days, but having not had my support system I might not have made it. It would have been miserable without my mom and partner. (R328)*

> *[EPing would have been worse] if I had no help. My mom is here to help till baby turns 6 months. (R1124)*

Participants' mothers influenced their breastfeeding journeys in less predictable ways as well. For example, one participant continued to hand express for 3 months after weaning from the pump (at 2 years' postpartum) so that they could provide a few ounces of their milk—"for immunity" (R32)—to their mother who was undergoing cancer treatment at the time. Another participant mentioned breastfeeding to lower their risk of breast cancer, which they had a higher risk of "because of my mother" (R177). Some participants mentioned that their own mothers struggled with or did not breastfeed. For example:

> *My mom never talked about her troubles nursing until well after I'd given up on direct nursing, she was plagued with flat nipples too, so I never thought I'd have any troubles with latching and direct nursing. (R273)*

Interestingly, some participants mentioned the added benefit of having their own mother feed their child and having them bond that way. While this benefit was mentioned

occasionally in relation to other family members, it was never mentioned in relation to participants' in-laws.

6.3.1.2. Participants' In-Laws

Participants' experiences with their in-laws varied widely. While this was not a provided response option for Q125: *How much do or did family and friends support your exclusive pumping?*, some participants (19/1,670; 1.1%) wrote their mother in-law, or just in laws, in the "Other (please explain)" option and scored them. Predictably, most participants who did this had either very positive or very negative experiences: seven (36.8%) scored their in-laws 75/100 or above, whereas 10 (52.6%) scored them 25/100 or below. A greater number of participants wrote about their in-laws in their open-ended answers. Statements expressing positive support included:

> *I was so blessed to have in laws who supported my desire to EP that they paid for an overnight doula for the first 2–3 months of my daughter's life. (R844)*
>
> *My mother in law has also been very supportive and encouraging. They are impressed by the dedication and commitment to feeding my son. (R120)*
>
> *My mother in law told me after 2 months that I was a real trooper and that it was okay to stop EPing if I wanted... (R926)*

Statements describing negative support experiences from in-laws included:

> *My mother in law and father in law think it's time for me to stop because my son is 21 lbs at 7 months. (R757)*
>
> *My in laws do not support it and are inconsiderate of the time I need and would plan long events far from home right after the baby was born. (R915)*
>
> *With the exception of my mother who have supported me mentally, the other members of my family "had to accept it but never understood it" as said by my mother in law. Starting from 6 months my mother in law insisted that I should stop EPing. So there were times when I would find myself pumping in a toilet of the conference center before going home so that my mother in law won't see me with a pump. (R1038)*

> *My in laws were awful about me pumping for my son. Thought it was too much work for my husband having to help feed and do dishes. (R1700)*

More so than participants' own mothers, mothers-in-law tried to impose their own infant feeding experiences on participants:

> *"Why don't you just feed him formula, that's what we did when we had J*** (my husband)." My mother in law also calls my breast milk formula even though she knows it's breast milk. For example we were leaving their house and she says "don't forget your formula" that was in their refrigerator. (R1819)*

> *Mother in law says why don't you put her to the breast? Did you try? I had to feed your husband every 2 hours on the dot. (R2181)*

Like participants' own mothers, some in-laws put pressure on participants about either nursing or formula feeding:

> *Mother in law asked when I would transition to formula (I was still on maternity leave) as if this is the standard. (R1213)*

> *My Mother in Law (an ABA [Australian Breastfeeding Association] councillor) doesn't understand why I would waste my time pumping instead of bonding with my babies direct feeding them. (R1493)*

However, similar to some partners, some in-laws needed time to learn about EPing:

> *My mother in law didn't understand at first, it took her a while to come around to the idea. (R602)*

> *My mother in law, who is a pediatrician, told me it was impossible to maintain supply and would last a month, tops. Now she presents EPing to her patients as an option. (R775)*

6.3.2. Grandfathers of the Child and Other Immediate Family Members

Grandfathers of the child (i.e., fathers and fathers-in-law of the breastfeeder) are rarely mentioned in existing literature. Recently, Cisco (2017) examined the kin and non-kin supporters of breastfeeders and found that more frequent breastfeeding discussions with their father were associated with longer durations of breastfeeding. They also provided important emotional and informational support. In another recent study of

support from male family members, Alianmoghaddam et al. (2017) mention that the influence of male family members other than partners has yet to be ascertained.

BWN study participants did not mention their fathers often. Like in-laws, when they did mention them, they described them as either very supportive or not at all so. Some of the positive comments made by participants included:

> *My father in particular comments on my dedication. (R345)*
>
> *My parents were very supportive (my dad is a midwife, my mom an OB nurse). (R1719)*
>
> *My parents bought me a pump after my dad had to watch me sobbing while feeding his granddaughter. (R1572)*

Negative support participants' described receiving from their fathers included:

> *My father was the only person with input, he said "do you just not want to breastfeed?" And then "you are going to get tired of pumping" oh really dad?! Did you get tired pumping for me when I was a baby? Yeah didn't think so! So zip it! End of conversation and discussion. (R654)*
>
> *My father asked me, after I had been pumping for 9 months with my second child, "When are you going to stop, or are you still going to be pumping for him in kindergarten?" Half-joking, half-not. Dick. (R722)*
>
> *My father and stepfather-in-law was the only one who had less than pleasant things to say, which was more about my oversupply and comparing me to a cow. This is more because they are just idiots who don't know how to handle delicate social situations. Truly both very loving men, just didn't know how to handle seeing bags and bags of frozen breast milk. (R1094)*

Cisco (2017) found that siblings (and siblings-in-law), especially brothers and brothers-in-law, did not offer much breastfeeding support. Only a handful of *BWN* participants mentioned their sisters and even fewer mentioned their brothers. Several participants' sisters helped them set up a pump and provided informational support, whereas other participants were envious of their sister's success or felt that their sister was judgmental about the fact that they were not nursing.

6.4. *"Some of my friends don't get it, but most are super supportive—especially those who nursed their babies."*
Close Friends

Few studies, including the *BWN* study, separate friends and family, despite several studies having found that friends provide different types of support and influence than family. For example, Cox et al. (2017), in their study of types and sources of breastfeeding support in rural Western Australia, found that after "Child Health Nurses" (nurses belonging to community-based information and support programs for young children and their families) and general practitioners, friends were the most common source of breastfeeding advice and support. Likewise, in a study of an urban population in Nepal, Chandrashekhar et al. (2007) found that participants' friends' breastfeeding preferences were influential (when feeding preferences of their husband and mother were not): those who had breastfeeding friends were 2.2 times more likely to breastfeed exclusively (95% CI [1.1, 4.5]). In relation to pumping specifically, Qi et al. (2014) found that the risk for experiencing pumping problems was 23% lower (OR = 1.77, [0.61, 0.96]) when friends supported individuals' pumping.

In response to the "Other (please explain)" option to Q125: *How much do or did family and friends support your exclusive pumping?*, 25 (1.5%; *n* = 1,670) *BWN* study participants wrote in "friends" and scored them. Over three quarters (76.0%; 19/25) of participants scored their friends 75/100 or better, with only two (8.0%) scoring them 25/100 or less. Excluded from this count—and the following discussion—are references to "online" or "Facebook" friends, as these are addressed in Section 6.6.

In their open-ended responses, participants who referred to friends often did so as someone that they had seen nurse successfully. Likewise, a friend was often someone who had EPed:

> *I had a friend who had EPed for her twins and she directed me to a support group. I learned a pumping schedule and all kinds of helpful tips to raise my supply and maintain it until my son no longer needed breastmilk. (R458)*
>
> *I had a friend who gave birth a couple months before me who was EPing but I had never heard of it before. When we could not get her to breastfeed after the hospital stay, I started EPing. (R1861)*

Others had watched their friends struggle with nursing or have outcomes that they (the participant) perceived as negative and, therefore, they EPed. For example:

> *I saw my friend suffer 6 weeks trying to get her child to latch only to have to supplement because he wasn't gaining weight. I knew that if I pumped I would always know how much he was getting. (R2243)*
>
> *I also have been around several friends and family members who have directly nursed and their child while nursing was extremely attached to their moms to the point of not wanting to be held by anyone else or not having a good sleep schedule. (R2113)*

Many participants expressed that EPing would have been worse had they not had supportive friends. A few participants mentioned the type of support they received:

> *I also had a friend that came into town for the holidays and gave me her extra expressed milk to help get me through as I worked on my supply. … I kept feeding him my milk and supplementing with my friend's as needed. (R1996)*
>
> *Even the LC had a hard time getting my daughter to latch. That night a friend came over and gave me her old breast pump so I instantly started pumping about every 3 hours or so for 20-30 minutes. (R1610)*
>
> *Nobody showed or talked me through pumping. They all just talked about breast is best. It wasn't until I was beyond upset in the middle of the night I called my friend for support and she walked me through the pumping, storage, and production help that I felt comfortable doing it. (R1481)*
>
> *When I was ready to be finished, my mom and close friends made sure I felt good about my accomplishments, not like I was falling short of a goal or giving up. (R454)*

Friends also offered encouragement and emotional support, often in the form of admiration for the time and effort that EPing takes:

> *I did have a few friends who admitted that they are glad they don't have to EP and acknowledged how very hard it would be. They commended me, which was nice. (R1740)*

> *My friends and family were all very supportive, particularly my other "mom friends" who were extremely supportive and were my biggest cheerleaders. (R1453)*

> *People have been amazed that I was able to keep going for so long! Friends who had directly nursed their babies have said EPing is way harder and they would have never been able to keep going if they had had to EP! (R1789)*

Unfortunately, some participants received negative feedback or pressure from their friends. For several participants, receiving understanding and support from their friends would have made the experience of EPing better. For example:

> *Well-meaning family and friends still sometimes ask why I just don't try nursing again, or try harder at it, instead of going through the hassle of EPing. (R1452)*

> *Not having "friends" make me feel inadequate [would have made EPing better]. (R1425)*

> *I often hear "well you could just choose not to pump" if I complained to my friends. (R2189)*

> *Some friends told me I was crazy and should just use formula. (R920)*

> *I am African. I have had American female friends tell me that it is "UNAFRICAN" not to feed at the breast. How ignorant is that? (R335)*

Interestingly, some participants mentioned that their friends often had similar experiences, but that they were just not openly disclosing it:

> *I didn't really know it [EPing] was an option, but just started doing it. The interesting thing was that after starting it, I realized that over half of my friends and family that were "breastfeeding" were actually EPing as well. (R1445)*

> *In admitting my challenges to my "breastfeeding" mommy friends I have learned that motherhood is full of half truths. Most friends who "breastfed" and gave the impression this was the only way they fed their children did breastfeed but for perhaps 6 weeks or 3 months. Some never produced enough and supplemented*

with formula the whole time. In short many other women face feeding challenges, it is just most won't share these because the topic is sensitive. (R1136)

6.5. *"The lactation consultant I saw didn't seem to want to help me with exclusive pumping, she just kept trying to get me to latch my baby."* Lactation Consultants and Other Breastfeeding Care Providers

Breastfeeding support from more than just family and friends is essential to breastfeeding success. Several systematic reviews have examined the effectiveness of breastfeeding support. Shakya et al. (2017) reviewed 47 articles about community-based peer support and found that, in low- and middle-income countries, peer support resulted in a 1.51 times increase in the initiation of breastfeeding within the first hour of life (95% CI [1.04, 2.21]) and dramatic increases in exclusive breastfeeding: by 1.90 times at 3 months [1.62, 2.22], 9.55 at 5 months [6.65, 13.70], and 3.53 at 6 months [2.49, 5.00]. Importantly, peer support reduced the risk of prelacteal feeds (the potentially dangerous practice of feeding substances other than human milk, formula, or medication before initiating breastfeeding) by 62% [0.33, 0.45]. In high-income countries, peer support increased exclusive breastfeeding at 3 months by a factor of 2.61 [1.15, 5.95]. In an older systematic review of breastfeeding promotion interventions, Haroon et al. (2013) also found that interventions had greater impacts in low- and middle-income countries.

In their Cochrane review, McFadden et al. (2017) found that extra support, whether from lay people (i.e., peer support) or LCs, had a positive impact on breastfeeding. In their meta-analysis of 73 studies across 29 countries involving almost 75,000 mother-infant pairs, they found "all forms of extra support analyzed together showed a decrease in cessation of 'any breastfeeding', which includes partial and exclusive breastfeeding" (McFadden et al., 2017, p. 2). McFadden et al.'s findings were

not as dramatic as Shakya et al.'s (2017) findings, perhaps due to inclusion of "all forms" of support, rather than just peer support, and including countries of all income levels. They did, however, note that for those exclusively breastfeeding, face-to-face interventions, lay support, and interventions consisting of 4–8 face-to-face meetings were particularly effective (McFadden et al., 2017). Haroon et al. (2013) found that combining individual and group counseling produced increased exclusive breastfeeding rates and decreased early cessation.

Inexplicably, I did not include LCs in Q125: *How much do or did these individuals/groups support your exclusive pumping?*, despite including work colleagues, participants' doctor(s), and participants' children's pediatricians. Too few participants used the "Other (please explain)" option to write in and score LCs to report any scores. Unfortunately, therefore, there is no quantitative measurement of the level of support participants felt they received from their LCs. However, LCs were mentioned at length in participants' open-ended responses. In general, LCs were not rated highly by *BWN* study participants. For example, in the content analysis of participants' responses to Q138: *What would have made your experience of EPing* ***better?***, better and earlier support from LCs was one of the most prevalent responses.

The following subsections provide a condensed account of the extensive experiences of participants with professional LCs, that is, anyone providing lactation support (whether practical, informational, and/or emotional) who also holds an official title, role, and/or qualification, such as International Board Certified Lactation Consultant (IBCLC) or Certified Lactation Counselor (CLC). Peer support is addressed in Section 6.5.6.

6.5.1. In-Hospital Lactation Support

In their accounts of why they EPed, many participants wrote about interactions they had with LCs. For most, this involved seeking support for getting their newborn to nurse, often from multiple sources:

> *I tried to DN [direct nurse] for the two days I was in the hospital. I tried really hard. I saw every lactation consultant that came on shift, and had the nurse help us over night. (R104)*

> *While in recovery the nurses, myself, and the lactation consultants worked to get her latched. Throughout the day we worked on latching her. (R2308)*

When nursing was not successful, some participants experienced LCs that quickly showed them other ways to feed their newborn. For example:

> *When my son came out, the L&D [labor and delivery] nurse tried to get a latch and he couldn't. The postpartum nurse tried as soon as we got to her door and he couldn't, so she showed me how to hand express colostrum and feed with a spoon. I had an IBCLC come in first thing in the morning who told me "oh he's really young he will figure it out" and again showed me hand expression, told me to do I and use the pump If I wanted. By the end of the first day I asked to use the hospital pump which my postpartum nurse assisted with setting up. We tried again in the hospital to get baby to latch overnight with still no success. The next morning I saw a second IBCLC who showed me how to "finger feed" with a syringe. (R170)*

Other participants had to wait for LCs to suggest other options:

> *The day my daughter was born the Lactation Consultant gave me a nipple guard as I have inverted nipples and helped me to help my daughter latch. She encouraged me and said that I was doing ok. The second day I met with a different Lactation Consultant again and she worked with me on getting a better latch. The nursery nurse came into my room and started almost yelling at me, telling me that I need to supplement with formula as my daughter wasn't getting enough milk. … The Lactation Consultant came back in the room, she brought the hospital grade pump in and that is when my pumping adventures began. (R360)*

> *Many nurses came in, massaged (squeezed the hell out of) my breasts, attempted to get baby to latch, and showed me different positions for nursing. A lactation consultant was sent in after a while, and told me that my nipples were inverted, and my breasts weren't a good fit for the baby's tiny mouth. She gave me a pump, but I wasn't able to express more than a few drops. Discouraged, I requested formula. (R420)*

> *I had FOUR lactation consultants assist me while in the hospital and all left flustered because they could not assist with her latch. They even nicknamed her the "snapping turtle". ... The last consultant told me...you're just going to have to pump. (R1866)*

However, other participants reported that LCs did not know how to help and did not suggest any other feeding methods. For instance:

> *I wanted to nurse sooo bad but my daughter for the first three days of her life barely ate at all because she would fall asleep almost immediately when I held her and would attempt to get her to latch. ... LCs were kinda stumped on how to help because it wasn't so much of a latch issue as it was a sleepy baby who would refused to stay awake while eating. (Nothing was wrong with her; she would stay awake while anyone else held her) ... Frustrated on the second day home (and afraid I was starving my baby and that's why she was so tired), I called my sister to teach me how to pump. (R228)*

Even if a pump was provided as an alternative way to extract milk, participants were often still left without adequate support:

> *I requested a pump and was provided with a Medela Symphony pump. No one showed me how to use it properly, just "switch it on here, turn it up here." Technique was not discussed. I think I got about 5ml from a 20 minute session. It was not enough to put into a syringe to feed to my son. (R252)*

> *They [hospital staff] gave me a pump, but it was broken and they didn't offer another. The hospital has no LC on staff. (R275)*

For some participants, their birthing hospital just did not have enough LCs. A direct link between this and EPing was made by several participants:

> *She wanted to watch her nurse but she was the only consultant at the hospital I was at and always busy. She asked that I call her when the baby nursed so she could see. Long story short, she never made it back and I decided to go back to what was comfortable for me [EPing]. (R2193)*

> *Baby was not latching correctly in the hospital and a lactation consultant wouldn't come to my room no matter how many times I asked. After 1 day at home with too much pain of a painful latch I started pumping. I saw a lactation consultant at a different hospital but she only stuck the baby on and walked out, she did not help teach me how to deal with his poor latch. (R1565)*

Unfortunately, there were many participants who had very negative interactions with hospital LCs. For some, these interactions involved physical maltreatment:

> *Hospital policy was that they needed to see him feed before they would discharge me. I said that he didn't seem to be hungry. They didn't care and in came the UK equivalent of a lactation consultant. She woke up my son who immediately started crying. Tried to force him onto the breast but he was crying and naturally didn't appreciate it. Tried again in multiple positions, he didn't latch. Started massaging my breasts to encourage colostrum flow, remarked that I had a very very low supply as literally nothing was coming out. By now my son was red in the face from crying. The lactation consultant was very flustered, said that she would come back later and left. (R252)*

> *We had a lot of nurses and lactation consultants constantly grabbing us, and using different techniques. It was stressful and uncomfortable, for both of us. (R306)*

> *Then when it came time to breastfeed I was already traumatised and the LC grabbed my breast and thrust it into the baby's mouth. The pain was excruciating. I was shocked at the pain and had never heard that it could be this painful. The LCs at the hospital were rough and over worked. … Having so many people handle my breasts and having so much pain associated with the feeding completely traumatised me. It was a dark time. (R1886)*

Other participants experienced emotional harm. For example:

> *I was pissed off (and still am) at the NICU lactation consultant because she was rude and I feel that she ruined my chances at nursing by tearing me down instead of building me up when I was most anxious and vulnerable. (R883)*

6.5.2. Lactation Support in the NICU

In their review of studies on lactation support in the NICU, Mercado et al. (2019) found that, despite fewer than half of U.S. NICUs having an IBCLC, those "staffed with dedicated board-certified LCs have increased potential to yield improved breastfeeding rates through hospital discharge, increased proportion of infants who receive mother's own milk, and increased duration of breastfeeding or human milk expression through hospital discharge" (p. 383).

BWN participants who had EPed for a child in the NICU often felt that lactation support was lacking, particularly for establishing direct nursing once their child was old and/or stable enough to do so. For example:

> *I feel I was never properly supported whilst my baby was in NICU to help latching other than a lactation consultant planting her on. They NICU staff tolerance to feeding breast milk was low, they didn't give me enough time with her to feed her. … I feel if I was given appropriate support with breast feeding in NICU I wouldn't have needed to exclusively pump!! (R356)*

> *A lack of support for breastfeeding in NICU was also a key component of why I ended up exclusively pumping. I sought help from a lactation consultant because I didn't think my baby was latching correctly and I was told he was just small. There was immense support for feeding breast milk, but almost no support when it came to feeding at the breast. (R370)*

> *And when I finally got a chance to get her to latch, I got zero support. Between an impatient NICU nurse, an impatient baby, and an LC I only met in the hallway for 30 seconds, I felt destined for failure at nursing. (R1892)*

However, some participants had positive experiences of lactation support in the NICU, albeit for pumping:

> *He was in the NICU for 12 days and I started pumping immediately. The LCs at my hospital were knowledgeable about pumping and got me set up right away. (R57)*

> *We spent the first 6 weeks in the NICU where the lactation consultant helped me establish then right routine to give him my milk. (R241)*

6.5.3. Negative Experiences of Lactation Consultant Support

Participants often experienced LCs pushing getting their child "back to the breast," that is, latching their baby to nurse directly, even if a participant had settled on the decision to EP:

> *Lactation consultants … could have explained that EPing was a legitimate option, rather than just pushing breast, breast, breast all the time. (R722)*

> *Once I told the LC department that I was going to EP, they said they could no longer cover my hospital grade pump[18] or be seen in office, as that was to help nursing mothers. (R460)*

However, even when they were trying to work towards direct nursing, some participants experienced LCs who did not adequately support them. For example:

> *[I feel] angry and disappointed at my LC who was completely worthless and ruined my nursing journey for me. Had I had support and they either tried to find the source of my pain or encourage me through it until it got better, then I might have continued nursing. (R196)*

> *[I needed] some lactation appointments after discharge once my milk came in to help me in continuing to attempt nursing. I feel like the hospital stay was not good at all for helping me attempt breastfeeding as the nurses were judgy and wanted me to use their favorite position regardless of what had worked for me when we actually got a good latch. They were also very hurried and didn't have the time to spend with me to try different positions (or didn't want to spend the time helping me). (R446)*

Many participants felt that LCs were overly judgmental and critical of EPing. For example:

> *If my LC hadn't made me feel inadequate [it would have made EPing better]. (R82)*

> *The lactation consultant giving me the option and not making it about a failure [would have made EPing better]. (R517)*

> *[I received] skeptical looks from my doctors, his pediatrician, my lactation consultant and doula. (R2165)*

> *[I felt] judged by others, especially the lactation consultant that I tried to get help from. (R2184)*

Other participants felt criticized for their decisions more generally. For example:

> *I then went to a lactation consultant to help out with latching. I had a REALLY awful experience with this consultant. She made me feel terrible for supplementing with formula, for not continuing to practice latching even though*

[18] Some breast pumps are multi-user pumps that are rented, rather than bought, by breastfeeders. Sometimes, health insurance plans or public assistance programs cover the rental cost of these pumps.

our doctor said to stop for a bit because my baby would get so upset that she'd lose calories that she needed, etc. (R2184)

Being told by LCs that EPing was not sustainable, that it could not be done long-term, was commonplace:

The lactation consultant and nurses told me I'd never be able to make it one year. (R1538)

The LCs seemed to promote it only for establishing [or] boosting supply but did not seem to support or provide advice on long-term EPing. (R827)

I mentioned that I wanted to try and pump, she told me it wouldn't work but I could try. That pumping without nursing wouldn't last long, I'd dry up. I just couldn't believe that. (R840)

Some participants expressed wanting LC support in more general ways:

More support from professionals at the beginning of this nursing journey [would have made EPing better]. If it had been a clear option rather than something I discovered through various websites, if the lactation consultants, health educators, pediatricians, etc. had more info that they were willing to provide and validate exclusive pumping, maybe some of my initial guilt would intense emotional pain would have been much easier. (R658)

More support from medical professionals. Physicians and nurses constantly told me no one could EP and meet their babies demands. I proved them all wrong. (R301)

I did have some lactation support people who simply didn't know what to make of it – it's breastfeeding, but it's not, and so they weren't sure what to say. (R1191)

6.5.4. Positive Experiences of Lactation Consultants Support

A few participants had very supportive LCs. For example:

My lactation consultant was one of the few supportive people, and would often remind me that any amount of breast milk, even if it's only 2 oz a day, is better than none. (R119)

My LC was great at teaching me the basics of pumping, if she hadn't been supportive of pumping I probably would have given up right away. (R918)

Not having found my lactation consultant who constantly tells me how proud she is of my "huge success" with breastfeeding [would have made EPing worse]. (R238)

One form of support that *BWN* study participants described receiving from their LCs was in the form of providing "permission" for the participant to pump:

> *It was wonderful having an LC (second one) tell me it is okay to pump and feed her milk that way. (R406)*

> *I was at my last meeting with the LC and she gave me permission to quit [EPing], which was what I was looking for. I wanted someone to tell me it was okay to stop. She said, it's okay, he's had more than some other babies and some breastmilk is better than no breastmilk. I'm not sure if it was her giving me the permission or what but I started taking it one pump at a time. (R353)*

> *After feeling frustrated that my son was not taking in full feeds, I talked to both the nurses and lactation consultants about just pumping and whether it [EPing] was possible or "bad" in any way. They assured me there was nothing wrong with it. (R1140)*

Some participants praised LCs for finding a solution to the issues they were facing:

> *I had a very rough time pumping at first but saw a lactation consultant and my doctor and we resolved the issues. Getting help and having support is a must!!! (R2259)*

> *I saw five LCs, and they told me the same things. The babies were latched well, but they needed some time to get it all down. I felt unheard and broken. I met with a sixth LC, and she really helped me. She recommended two days of EPing before our next weight check. It would get my supply up and let me know exactly how much each baby received. She gave me formula to supplement, and I felt renewed. I could do this! (R2142)*

6.5.5. Lack of Access to Lactation Consultants

Although there were some exceptions, the overwhelming majority of *BWN* study participants did not have good LC support experiences. This is perhaps because there is little-to-no official training for LCs on how to pump in combination with nursing, let alone *exclusively* pump, as was discussed in Section 5.5. However, although many participants mentioned seeing an LC at some point, even gaining access to professional LCs is limited, especially in low- and middle-income countries (Haase et al., 2019). The IBCLC qualification is the only internationally recognized lactation professional

certification (Haase et al., 2019), yet as of February 2019, there were only 31,181 IBCLCs across the globe (International Board of Lactation Consultant Examiners, 2020), approximately one for every 4,500 births.[19] Individual country rates vary wildly: in the United States in 2018, there were approximately 20 IBCLCs for every 4,500 births;[20] in Canada, approximately 22;[21] in the United Kingdom, approximately 4;[22] and in Australia, approximately 29.[23] To compare, Ethiopia, a low-income country with a population of approximately 109 million (The World Bank, 2019c) and almost 3.5 million births in 2017 (The World Bank, 2019b), has no IBCLCs (International Board of Lactation Consultant Examiners, 2020). Barriers to obtaining the IBCLC qualification, such as needing certain educational credits or a healthcare qualification and to complete between 300–1000 hours of in-person lactation support, are likely part of the cause of these disparities (Haase et al., 2019; Thomas, 2018).

Given the lack of universal recognition of the qualification, which results in disparities in health insurance coverage and employment of IBCLCs in healthcare systems, many breastfeeders face economic challenges accessing care as they are required to pay for their services themselves (Haase et al., 2019). This was the experience

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[19] World population in 2017 = 7.511 billion (The World Bank, 2019d). Crude birth rate/1000 people in 2017 = 18.657 (The World Bank, 2019a). (7.511 billion/1000) x 18.657 = 140,132,727 total births in 2017. 140,132,727/31,000 = 4,520.

[20] Total U.S. births in 2018 = 3,791,712 (Martin et al., 2018). Approximately 17,300 IBCLCs in the United States in 2018 (International Board of Lactation Consultant Examiners, 2020). (17,300/3,791,712) x 4,500 = 20.5

[21] Total Canadian births in 2018 = 372,329 (Statistics Canada, 2020). Approximately 1,800 IBCLCs in Canada in 2018 (International Board of Lactation Consultant Examiners, 2020). (1,800/372,329) x 4,500 = 21.8

[22] Total U.K. births in 2018 = 657,076 (Littleboy, 2019). Approximately 590 IBCLCs in the United Kingdom in 2018 (International Board of Lactation Consultant Examiners, 2020). (590/657,076) x 4,500 = 4.0

[23] Total Australian births in 2018 = 315,147 (Australian Bureau of Statistics, 2019). Approximately 2,000 IBCLCs in the Australia in 2018 (International Board of Lactation Consultant Examiners, 2020). (2,000/315,147) x 4,500 = 28.6

of some *BWN* study participants, despite alleged health insurance coverage for LCs in the United States under the ACA:

> *I spent hundreds of dollars seeing an IBCLC to help with latching that was not reimbursed by insurance. (R2234)*
>
> *I tried calling a local lactation consultant the next day for help, she said it would be $400 [U.S. $] for the first visit. We couldn't afford that so I decided to not schedule. I continued trying to nurse and he continued to not gain weight. (R591)*
>
> *After an ENT referral from the pediatrician, doctor suggested lactation help instead of revising the lip tie. We couldn't afford ongoing lactation care at the time so I started pumping around the clock. (R561)*

Some participants struggled with finding suitable ongoing lactation care:

> *My only options for lactation consultants were a local hospital that I've never had a good experience with, or driving two hours to a bigger city. I was so exhausted and overwhelmed, it just seemed easier to keep pumping. (R737)*
>
> *In the United Kingdom, funding for feeding support is continuously being cut back and as a result there are also not many private lactation consultants either. I was therefore dependent on volunteer groups to help me with the latch problems. Whilst they meant well, they did not know how to help me as they seemed to give everyone the same advice and expected that to resolve things. (R2127)*
>
> *I live in a rural area and there are very few if any LCs around to help. Nurses could help with regular nipples but they really didn't know what to do with mine. (R2041)*

6.5.6. Peer Versus Professional Support

Studies demonstrate that peer and community support—for example, from the international breastfeeding peer support network, La Leche League—is often preferred over professional support. For example, McInnes and Chambers's (2008) qualitative synthesis found that support from health services was "described unfavourably with emphasis on time pressures, lack of availability of HCPs or guidance, promotion of unhelpful practices and conflicting advice" (p. 407). Brown's (2016) participants also found peer support to be particularly important:

> Positive stories were recalled as to hearing realistic tales of breastfeeding from experienced friends or breastfeeding peer supporters during pregnancy, which helped them form realistic ideas about what breastfeeding would be like. This information was also invaluable to learning how although these difficulties might arise, they could be overcome. (p. 106)

Relatedly, Burns and Schmied (2017) found that those supporting breastfeeding, whether peers or professionals, are most effective when they can be characterized as "a knowledgeable friend," rather than as "resorting to 'prescriptive advice-giving'" (p. 395). This is reflected in a number of other studies demonstrating the effectiveness of support groups, even when there is no official peer supporter or LC in attendance (Fox et al., 2015; Hoddinott et al., 2006; Rayfield et al., 2015).

Given that *BWN* study participants were predominantly recruited from online support groups, these groups were often their primary peer and community support. In their open-ended responses, a few participants mentioned attending La Leche League meetings, particularly prenatally. When participants sought out support from their local La Leche League after giving birth, they reported a variety of experiences:

> *When I first started EPing I felt very inadequate. I didn't fit in with my La Leche League group. (R700)*

> *I haven't really experienced any negative reactions with the exception of one La Leche League leader who lectured me on bottle feeding when I was 6 weeks postpartum. … Breastfeeding is so tied to nursing that I didn't feel like most breastfeeding groups (like La Leche League) were helpful for me (R345)*

> *I also reached out to La Leche League and worked with a leader from that organization on my latch. When the leader said it would probably take a week of cold turkey-no pumping or bottle feeding, just latching and nursing- I couldn't do it. (R658)*

> *I asked a La Leche league leader when no one else was convinced I could EP. She told me to go rent a pump. (R400)*

Several participants also criticized the tone of "the La Leche League book," most likely *The Womanly Art of Breastfeeding* (Wiessinger et al., 2010):

> *It sucked to read the La Leche League book and not feel included, like I wasn't part of some special club and like what I was doing was so weird that it wasn't included or even mentioned in breastfeeding books. (R400)*
>
> *I wish books like the La Leche League book didn't put so much importance on the emotional bonding in breastfeeding, it makes it suck so much more for those of who are struggling! (R1198)*

While the majority of participants were active members of thriving online support groups, they still mentioned that having local, in-person support groups that catered to their needs would have made their experience of EPing better. For example:

> *I think an in person support group [would have made EPing better]. At the beginning stage you feel secluded because you have a new baby and then even more because it's such a pain to pump while out and about. However, I think if I had an in person support group it would have improved my feelings in the beginning and would have motivated me to get out. (R365)*
>
> *Local support groups (in the same way that you find breastfeeding support groups) [would have made EPing better]. (R543)*

6.6. *"Without online support groups, I could never have successfully exclusively pumped."* Online Support Groups as More Than Sources of Information

While Gray (2013) found, as discussed above in Section 5.3.1, that the majority of breastfeeding posts on online support groups sought informational or tangible support, other studies reflect "not only a desire for facts and information but an interest in more experience-based advice as well as interacting with other parents" (Plantin & Daneback, 2009, p. 9). Brady and Guerin (2010) found that the discussion boards on an Irish parenting website were "seen as a safe, supportive space, in which mothers could develop an enhanced frame of reference in which to better understand the role of parenting" (p. 14). Likewise, Johnson (2015) found that "intimate mothering publics"—"mom groups," in other words—were spaces for "women to 'test' or legitimise their new identity as a mother" (p. 237), whether these groups were off- or online. Joining these groups was

motivated by a variety of factors, including “feelings of community or acceptance, the desire to be a good mother or parent, emotional support and the need for practical and experiential advice” (S. A. Johnson, 2015, p. 237).

O’Connor and Madge (2004) noted, however, that internet-based interactions did “not replace face-to-face communication or more traditional support mechanisms such as family, friends, and health carers, rather it serves to supplement these by providing an additional resource” (p. 351). Bartholomew et al. (2012) found that when “when mothers reported that a greater proportion of their Facebook friends were family members or relatives, they reported greater satisfaction with the parenting role” (p. 465), perhaps indicating a melding of on- and offline support networks. However, they also found that “no aspect of Facebook use was significantly associated with parenting self-efficacy for mothers or fathers, and for mothers, more frequent visits to Facebook accounts and more frequent content management were each actually associated with higher levels of parenting stress” (Bartholomew et al., 2012, p. 465). In an analysis of Twitter use by mothers before and after birth, 15% reduced their social media interactions after birth, but what they did tweet displayed “a number of changes in emotion expression in a generally negative direction” (De Choudhury et al., 2013, p. 1440).

Other studies have found that online social support has positive outcomes for mothers, especially if young and isolated or struggling with their mental health (Dunham et al., 1998; Scharer, 2005). Another study characterized online support as providing reassurance that resulted in participants feeling less alone and more able to normalize symptoms or experiences they were undergoing (Prescott & MacKie, 2017). Social

networking sites (Nolan et al., 2017) and the internet more broadly (Valaitis & Sword, 2005) have been found to be particularly important resources for adolescent mothers.

A number of studies have examined online breastfeeding support specifically, finding that online breastfeeding promotion programs improved positive beliefs about and intentions to breastfeed, increased exclusive breastfeeding rates, and were more effective at building knowledge than offline programs (e.g., Y. Lau et al., 2016; M. E. O'Connor et al., 2011; Pate, 2009). The role of online support groups specifically is less explored. Jin et al. (2015) found that breastfeeders ask questions about breastfeeding challenges and discuss and dispel one another's fears. In Bridges' (2016) evaluation of three closed Facebook support groups attached to the Australian Breastfeeding Association, they found that the support offered could be classified into four themes:

- Community: a place to "meet other like-minded women, in a safe and private environment where there was a sense of reciprocity" (Bridges, 2016, p. 14).
- Complementary: the online groups "provided a temporary replacement for face-to-face support groups when they were unable to find the time or to physically make it to one of these groups in person" (Bridges, 2016, p. 15).
- Immediate: the groups "gave breastfeeding mothers access to immediate help when they needed it (24/7), from their very own breastfeeding community" (Bridges, 2016, p. 15).
- Information: the groups were an important source of trusted information, particularly because of their association with the Australian Breastfeeding Association and the trained volunteers that participated.

Some of these themes reflect the experiences of *BWN* study participants, particularly pertaining to information (discussed in Section 5.3.5.1) and community. However, *BWN* study participants did not experience online support groups to be complementary to in-person support, given that few (if any) in-person support groups exist specifically for EPing (see Section 6.5.6).

For *BWN* study participants, online support groups were more than just another online community; they became an important psychosociocultural experience. What follows is a brief exploration of the psychological, social, and cultural roles of online EPing support groups to influencing the EP journeys of *BWN* study participants.

6.6.1. Psychological Roles of Online Support Groups

BWN study participants experienced positive psychological benefits from' membership in online support groups range, including increased self-confidence and self-efficacy and a more positive attitude. Emotional health outcomes of EPing in general were examined in Chapter 3, but are also addressed here as psychological outcomes of online support group membership.

Improved breastfeeding self-efficacy and self-belief was expressed by many participants. For example:

> *I was so lost the first 14 weeks. Once I found the EP: BWN [Facebook] group my whole world changed. I finally found my tribe and recommend it to EVERYONE. I wouldn't have lasted as long [EPing] as I did without them. (R110).*
>
> *Not having the support of women in the Facebook groups I joined would have made EPing impossible. (R200)*
>
> *There were so many times I was ready to call it quits. But I kept reminding myself that my goal is 12 months and I can do it. If I didn't have the supportive Facebook groups, I probably would have given up already. (R2119)*

I feel so much more confident now and the pumping group helped me to get there. (R1148)

Participants had increased self-esteem because of not feeling alone in their struggles or guilt:

I looked online as I felt guilty for not breastfeeding, but felt better knowing that I am not the only one out there that has struggled with this. I especially felt bad as breastfeeding is showing as something beautiful and I hated it and didn't find it to be an amazing experience with my children. (R923)

But the first 4-6 weeks were mainly guilt, anger, failure. Especially when others would nurse with no issues. I blamed myself, and looking back, I probably should have talked to someone about those feelings. I cried a lot. Slowly it got better and when I joined the Facebook group it got better rapidly. I felt better about myself, I felt stronger, committed, a sense of community. (R1624)

Many participants expressed that their attitude and outlook changed for the better once they found an online support group:

I was on a birthing chat group (What to Expect October 2016) and someone mentioned exclusively pumping and a Facebook group that helped them. I had been EP[ing] for about 3 months by then, but when I joined those groups everything changed. I learned how to freeze my oversupply, what tips and tricks other people used (i.e., not washing parts every time but instead storing them in the fridge), how to entertain baby while I pumped, how to pump at work, etc. etc. More importantly, I learned that there were literally hundreds of women who did this, I wasn't alone, this was an actual, sustainable way to feed my baby. I wasn't a failure, nothing was wrong with what I was doing, and there was so much support and motivation that I directly attribute that to why I am still pumping today. (R1624)

I discovered EPing groups and talked to other women who had done that. And then I decided I can do it. (R424)

Lastly, feeling saved by online support groups was mentioned by some participants:

Not finding the Exclusively Pumping Mammas Facebook page [would have made EPing worse]. They saved me! (R706)

I don't know where I would be without my EPing Facebook groups. They have been my rock throughout this whole process. (R556)

If the Facebook group didn't exist I probably would've lost my mind. (R751

> *I started searching Facebook groups for exclusive pumpers and found "Exclusively pumping moms PRIVATE GROUP" which totally saved me. The women on that group are the reason I have made it this far. (R635)*

6.6.2. Social Roles of Online Support Groups

Social capital is the collective of the actual or potential resources embedded in durable social relationships (Bourdieu, 1986): the higher the quality of social resources available to an individual, the more likelihood there is of achieving desired outcomes or goals. Social capital can bond close-knit groups, such as family and close friends, and provide social and emotional support (N. Lin, 2001), as well as bridge between different groups, such as acquaintances, and can provide access to new information (Harpham et al., 2002; Putnam, 2000). Jang and Dworkin (2014) found that while the frequency of social networking site use was positively related to their U.S. mothers' bonding social capital, the number of social networking site activities (e.g., posting pictures, announcements, engaging in groups) increased both bridging and bonding capital. Bartholomew et al. (2012) found that new parents could build their bridging social capital by interacting with online-only friends.

Clearly, online support groups provided access to new information to *BWN* study participants. As mentioned in Section 5.3.5.1, some participants found out about online EPing support groups through others, demonstrating the bridging social capital that members of these groups possess. However, likely one of the most important non-informational roles of online EPing support groups is growing and maintaining bonding social capital. Community was mentioned frequently:

> *In the UK EPing is virtually unheard of. It was via Facebook that I found online support groups for women like me. The vast majority of women were US based but it didn't matter, it was a community for women who were determined to do the best for their baby in unusual circumstances. (R252)*

I've learned how to EP almost exclusively from EP Facebook groups. The community is so welcoming, forgiving and helpful. I knew nothing of EPing before I gave birth and its one parenting decision I feel very confident in. (R661)

Feeling a part of something and not being alone was important for many participants:

I generally felt like I discovered these things [about EPing] on my own, until I found that Facebook group. That group seriously made me feel part of something; like I wasn't alone or a freak for not being able to breastfeed my healthy son. (R875)

In the comment section, I saw EPing FB group suggestions, so I followed the links to join their groups. I felt so supported and more educated on EPing after that. Never felt alone again. (R309)

Building enduring connections was another element of the social importance of online support groups:

[EPing] connected me to a wonderful community that I still value today. (R482)

Facebook group "Exclusively Pumping Mamas" was (and still is!) so helpful. Seeing others who were going through similar experiences made me feel like I wasn't alone. All my friends who are moms have been able to breastfeed, so it was so great to connect with other EPers. (R1802)

Honestly talking to other women on Facebook was the most helpful in basically answering everything. The women on Facebook were going through it, had been through it or had gotten information from their LC, midwife, doctor, etc. So it is a way to directly connect with women immediately and get support and encouragement. EPing, especially in the middle of the night can be a lonely journey and to talk to people who are in the same spot doing the same thing at 3am can help make that middle of the night pump more tolerable. (R180)

The exclusive pumping group on Facebook was an absolute life saver. Everything from moral support, to humor, to tips. I needed it because I literally didn't know anyone personally who could relate to what I was doing. (R567)

6.6.3. Cultural Benefits of Online Support Groups

Joining the "wrong" kind of breastfeeding group, especially those which discussed direct nursing, caused negative experiences for some participants:

I started off in the breastfeeding [nursing] groups and they made me feel inadequate. (R283)

> *I joined a breastfeeding group where I learned some info but most of the women would also give unsolicited latching tips which made me feel like I was a failure for EPing. (R219)*

In contrast, groups specifically for exclusive pumpers provided a safe space; the cultures of these groups were congruent with the psychosociocultural needs of the *BWN* study participants:

> *I felt judged for not direct nursing in a lot of other spaces. I had to leave my local Badass Breastfeeders Facebook group because of the encouragement to go "back to breast." The Facebook group was the only place where I felt safe...safe to discuss, safe from direct nursing triggers when I was struggling, and for encouragement from others in my same boat. (R42)*

> *I've learned a lot about exclusive pumping from my best friend, from an exclusive pumping Facebook group, and from online websites such as exclusivepumping.com, kellymom.com, and Pinterest. These resources have provided me a safe place (where I don't feel judged) to ask questions and seek advice, tips, and reassurance about all things EP-related. (R395)*

> *It was such a welcoming feeling to be surrounded by other mothers who had experienced so many similar issues and who could really truly understand and empathize with one another. It was also great to see and hear so many wonderful success stories. Supportive and encouraging feedback was offered so frequently too. (R2390)*

Similar to participants in Bridges' (2016) study, several *BWN* study participants characterized their membership in a Facebook group as being part of a "tribe:"

> *If I had found the Facebook group exclusively pumping mamas earlier [it would have made EPing easier]. In there I feel like I am a part of a tribe of women in the same boat. (R240)*

> *I am proud to belong to the EP Momma Tribe! (R1610)*

Relatedly, EPing had become part of their identity for some participants, so much so that they became advocates for it:

> *From there I found the EP Mamas Facebook group, and was able to be embracing of my identity as an EPer. (R1478)*

> *I think more people should try it, and I am happy to be an advocate for it. (R1490)*

> *Today I am an advocate for EPing. I tell as many people that will listen that it is possible. I'm that mom that freaks out new EP moms with all of my information. We don't plan on having more kids but if we did I would EP. (R447)*

Like R447, sharing what they know with both those inside and outside online support groups is part of the culture of EPing:

> *I want to add how crucial I have found it to be a member of an Australian Facebook group for exclusive expressers. There is so little information available, and I have drawn heavily from the experiences of the women in this group. I now share my own knowledge daily with the new group members. (R1490)*

> *I learned a lot from a Facebook group … that I stumbled upon after my journey had begun. I wish I knew about them sooner. I developed hacks on my own, and learned so many more on that site. While I lurked for the most part, I read everything. I absorbed everything. I have actually managed to help a young girl in my community with her exclusive pumping journey as a result of all I learned. I'd help a million more willingly too. I want to provide help to others who may not have had that support or the courage to perform research like myself. (R411)*

6.6.4. Online Support Groups as Communities of Practice

While the information practices within online support groups can be viewed through Chatman's (1999) theory of life in the round, the unique culture within online EPing support groups as a whole also meet the definition of a c*ommunity of practice*: a group of "people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2006, sec. "What are communities of practice?"). A community of practice exists if the following three elements are present:

- A *domain*, which "has an identity defined by a shared domain of interest … They value their collective competence and learn from each other, even though few people outside the group may value or even recognize their expertise."

- A *community*, within which member pursue their interest, "engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other."
- A *practice*, whereby members of the community are practitioners, having developed a "shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems."

  (Wenger, 2006, sec. "What are communities of practice?").

Newcomers to an established community of practice not only learn to be practitioners, but have their identities shaped by the community of practice. No truer is this than in online EPing support groups: for example, characterizing them as "tribes," having shared language, and being primary sources of EPing information as well as support.

However, this is potentially problematic, given the risk of confirmation bias, as described by Zhang and Watts (2003):

> When newly acquired information is consistent with a member's prior knowledge, this invokes the heuristic that "this is likely to be true because it is consistent with what I already know to be true," and triggers the members to assess the message validity favorably, thus leading to knowledge adoption. (p. 99)

What is missing from this knowledge adoption is an assessment of objective truth, so information that may be incorrect may be adopted as truth and perpetuated throughout the community of practice. Put another way,

> Communities of practice may well be predisposed to the absorption and creation of certain knowledge and the negotiation of particular types of meaning to the detriment to other possible interpretations. … Communities of practice may become static in terms of their knowledge base and resistant to change. (Roberts, 2006, p. 629)

In addition, a member's position within the community and internal power dynamics also influence the types and nature of the information valued within the community:

> New community members move from the periphery to a position of full participation as they develop their knowledge and learn from skilled practitioners. Those members who have full participation will have a greater role and therefore are likely to wield more power in the negotiation of meaning. (Roberts, 2006, p. 627)

Online communities of practice for EPing have developed out of necessity—EPers need the practical, informational, and emotional support that many are not adequately receiving elsewhere. Lack of empirical data and/or input from actual experts leads to a preponderance of information based on anecdotal evidence, which then develops into "fact" within these communities of practice. This is likely not a problem the majority of the time; for example, when anecdotal evidence produces objectively correct recommendations (hypothetically, a specific breast pump is more suitable for certain EPers) or when the information provided concerns an inconsequential outcome (e.g., a certain brand of accessory is routinely recommended over another brand). However, certain recommendations, common within EPing groups but based on member preference, tradition, or some other type of anecdotal data, may lead to potentially dangerous outcomes (e.g., placing breast pump parts in the fridge between uses, rather than washing).

Assessing the information provided within online EPing support groups, or as entities in themselves, was not the focus of the *BWN* study, but is an important avenue for future research, especially given their importance to the lived experiences and health outcomes of EPers and their children.

6.7. *"My job was pretty supportive of my pumping, but if I had had longer maternity leave, I would have stuck with nursing."*
Breastfeeding Without Nursing Study Participants' Workplace Support

Those employed full time are less likely to initiate breastfeeding and tend to stop earlier (Mirkovic et al., 2014a, 2014b; A. S. Ryan et al., 2006). Similarly, the earlier a breastfeeder returns to work, the less likely they are to continue breastfeeding—exclusively or at all (Calnen, 2010; Islam et al., 2017; Mirkovic et al., 2014b; Ogbuanu et al., 2011; Scott et al., 2001). Of the IFPS II respondents stopping breastfeeding 1–6 months postpartum, over one fifth (21.9%) said that not wanting or not being able to breastfeed or pump at work was an important reason for stopping (Li et al., 2008). Shealy et al. (2005) note that several studies have demonstrated the effectiveness of workplace lactation programs in increasing both the duration and exclusivity of breastfeeding. Workplace support has a positive impact on the breastfeeder's work experience and productivity, overall staff loyalty, and the employer's public image and decreases employee absenteeism, healthcare costs, and employee turnover (Shealy et al., 2005).

In their systematic review, Dinour and Szaro (2017) reviewed workplace lactation and/or breastfeeding support programs. They found that the most common program in the literature was provision of a lactation space, followed by breastfeeding breaks and comprehensive lactation support programs, all of which had at least one positive outcome, whether related to breastfeeding or not. The CDC's *Guide to Breastfeeding Interventions* (Shealy et al., 2005) made a plethora of suggestions for workplace breastfeeding support, including:

> Writing corporate policies to support breastfeeding women; teaching employees about breastfeeding; providing designated private space for breastfeeding or expressing milk; allowing flexible scheduling to support milk expression during work; giving mothers options for returning to work, such as teleworking, part-

> time work, and extended maternity leave; providing on-site or near-site child care; providing high-quality breast pumps; and offering professional lactation management services and support. (p. 7)

Of critical importance is actually setting up and maintaining a supportive workplace: Ryan et al. (2013) noted that workplace programs are "often not enforced and are inadequately implemented, particularly in unskilled and low-income occupations" (p. 468). Relatedly, employers need to be proactive in their support of parents returning to work; in their study of breastfeeding mothers in Ireland, Desmond and Meaney (2016) found that "many did not disclose to their employers that they were breastfeeding and did not make enquiries about being facilitated to continue to breastfeed after their return to the workplace" (p. 881), and therefore perceived a lack of support.

Unfortunately, in the *BWN* surveys, participants were asked about their current employment status but not their status when breastfeeding. It would not help to only analyze participants who were pumping at the time they answered the survey, since participants could also "check all that apply" when asked what their employment status was, so too great a number of combinations were created to draw any meaningful conclusions about whether employment status affected participants' EPing experiences. Since the follow-up surveys asked participants to provide data about employment changes, future data analysis could investigate the link between employment and EPing.

However, in response to Q97: *What are the reasons you exclusively pump(ed) instead of directly nursing?*, 14.3% (286/2,005) of participants selected "Went back to work and was pumping anyway." There was a significant correlation between residing in the United States and selecting this reason: only 7.8% (21/268) of non-U.S. residents selected this reason, whereas 15.3% (259/1,435) of U.S. residents selected it, χ^2 (df = 1, n = 1,703) = 17.145, $p < .001$. This finding is not surprising given that the United States is

the only high-income country in the world (and the only country within which *BWN* study participants resided) without paid parental leave (Organisation for Economic Co-operation and Development, 2019). Interestingly, there was no association with income level and choosing this as a reason to EP, but there was an association between education level and EPing related to workplace pumping: as education level increased, so did the proportion of participants selecting "went back to work and was pumping anyway," Cochran-Armitage test of trend, $p = .03$. One possible explanation could be that those with higher education levels are more likely to have white collar or professional jobs where pumping breaks may be easier to achieve than those in blue collar or service jobs. Future analysis of follow-up surveys may be able to provide more insight.

However, participants wrote about their workplaces in their open-ended responses, providing further understanding of EPing and the workplace. Many indicated that they intended to pump only when they were at work once they had returned after their parental leave, but as already demonstrated, most participants' pump use began far earlier than this. However, the majority of participants that mentioned going back to work wrote that because they would have to pump anyway, it made the decision to EP easier:

> *I knew when I returned to work, I would only be able to direct nurse once or twice a day, which did not seem worth all the hassle of a painful latch. (R226)*
>
> *After my 6 weeks of maternity leave, my husband was going to be taking 9 weeks paternity leave. Since I was going back to work and my LO [little one] was going to be bottle fed most of the day, I figured why even attempt to nurse. (R2136)*
>
> *I'll attempt to breastfeed again after [lip tie] treatment, but I have to pump when I go back to work, so we might just stay with what we have going now. (R2330)*

However, for some participants, their short parental leave impacted their choice to EP, often because they did not want to spend their leave struggling to latch their baby:

> *My daughter had trouble latching and I was set to return to work at 7 weeks postpartum, so instead of spending what little time I had left with her trying to get her to latch I got comfortable with pumping. (R101)*
>
> *Upon discharge I decided that the stress of attempting to nurse was not worth it. I had gotten into a routine with pumping, it was comforting to know exactly how much my son was eating, [and] I would be returning to work within two weeks anyway. (R221)*
>
> *With my first daughter I knew I was returning to work in 6 weeks and when she didn't get the hang of nursing I didn't push it because I hated to get her used to nursing only to change her to a bottle in a few weeks. (R1414)*

For others, their child did not want to latch once they had gone back to work and introduced a bottle, clearly demonstrating the need for paid family leave of an adequate duration:

> *I had to go back to work when she was 3 weeks old due to financial difficulties and once she got used to the bottle she refused to latch and would scream when I tried to nurse her. I had already begun pumping so she could have milk while I worked so I just pumped more and fed her breastmilk from a bottle full time. (R233)*
>
> *I went back to work 6 weeks after the birth of my baby. He nursed great while I was on leave. However when I returned to work, my child decided he preferred the bottle over the breast. He began refusing the breast. My son receiving breast milk was the most important thing to me so I began pumping exclusively. (R636)*
>
> *Once I went back to work at 4mpp [months' postpartum] my child clearly preferred the efficiency of getting her milk from the bottle. She would scream and push away from my breast and finally at 5mpp I gave in to her unwillingness to nurse. I strapped on my pump 8 to 12 times a day anyway. (R1601)*

Even participants who were EPing before they went back to work felt that more parental leave—or not returning to work at all—would have improved their experiences:

> *I went back to work at 12 weeks postpartum and while that is a lot of time to many moms in the US, a few more weeks at home would have made my pumping journey so much easier. I'm still missing a ton of time out of my work day pumping but it has become more manageable as I have been able to drop pumps. (R200)*
>
> *It would have been better if I didn't have to go back to work. It [EPing] was too much time away from my job when I went back. (R230)*

Relatedly, some participants mourned the loss of nursing—and struggled with the consequences of not nursing at home—after having been away from their child at work:

> *I was really looking forward to breastfeeding. I only had 8 weeks of maternity leave and had imagined that after going back to work nursing would continue to give me great bonding time with my son. (R345)*

> *Then going back to work came closer and I was hopeful that I'd only have to pump at work because he started nursing well. Then right as I went to work he went on a nursing strike. It made me fearful as to whether or not I could keep up with his needs (big eater) while at work. I have to pump in the middle of the night just to have enough milk to send to daycare with him. I worry about the effect of increased sleep disruption and reduced hours of sleep on my ability to do my job well. In addition, it makes me really sad that the little time I get with my son gets reduced even more by the need to pump several times while at home. Being out and about also makes it difficult and fitting all my pumping time in at work is difficult. (R629)*

Of the 695 participants who answered Q69/89: *Why did you wean from the pump?*, 157 (22.6%) selected "going back to work/difficulties with pumping at work." However, only 5 (0.7%) of these participants provided this as the *only* reason they weaned from the pump. More common were participants unable to pump enough at work to sustain their milk supply. Since many EPers have to pump for longer periods of time than breastfeeders who only pump while they are away from their child, some workplaces were not able to accommodate their needs, even if facilities were available:

> *With my first I wasn't able to make my goal of 12 months because I was working outside the home and I dried up because of not pumping on schedule. With my second I told my boss I'd quit if I couldn't work from home so I could be free to pump. (R517)*

> *I went back to work at 4 months which made it difficult to pump on schedule, hence my supply fell. My work environment was very supportive of nursing mothers. We had a room and an entire set up with electrical outlets and a fridge. (R783)*

> *More freedom to pump at work when I wanted [would have made EPing better]. I was only given my 30 minute lunch break to pump and eat lunch. 1 break a day working 8+ hours.*

Better workplace facilities and/or accommodations would have made EPing better for some participants. For example:

> *I struggled when back at work as I had to pump in the loo at lunch and didn't feel supported by my boss or colleagues. (R427)*
>
> *Having a dedicated place at work to pump [would have made EPing better]. (R1707)*
>
> *I would've loved to pump at my desk and continued to work (I work in a cube) but people walk by all the time and the pump was loud. I learned to appreciate the quiet time in the pumping room – but that was unpaid time I had to take. (R108)*
>
> *And [EPing would have been better] if I wouldn't have been walked in on while pumping at work multiple times–even with the door locked and a sign up! (R914)*

Having to take breast pumps and pumping accessories from home to work and back made EPing worse:

> *A second pump – 1 for work and 1 for home [would have made EPing better]. (R820)*
>
> *Not having to haul pumping supplies back and forth to work [would have made EPing better]. (R1445)*

Several participants mentioned the awkwardness of having to pump at work:

> *Not being the first person in my department to pump at work [would have made EPing better]. There are two other pregnant women in the department and of course I am the trailblazer. I wish someone came before me and that pumping at work was normalized. I right now have to meet with the fire warden in my school to request the dates of planned fire drills because one occurred in the middle of a pumping session. (R946)*
>
> *I also pump at work and I was nervous about asking for a room to pump, and I still get nervous about leaving my desk and people coming up to the office looking for me or wondering where I am (R2164(*

Unfortunately, some participants experienced very negative situations at their workplace:

> *My employer was not supportive of pumping and I faced harassment at work. (R1188)*
>
> *I left my job because I was not able to find time to pump and found a new job that would accommodate me. My coworkers bullied me and spread rumors that I was using it as an excuse to get out of work. (R1363)*

Despite these workplace issues, most participants reported supportive workplaces, as indicated by a median score of 82/100 (M = 76.1, SD = 29.5; n = 1,670) (with 100 representing the most supportive) in response to Q125: *How much do or did family and friends support your exclusive pumping?*. Some participants praised the supportiveness of their workplace, without specifying the type of support offered (in addition to amenities that would normally be available):

> *When I went back to work, my husband and I decided it was best for us to just pump so he could help with bottle feedings. … I am a federal employee and have my own office so I'm extremely lucky to have a great place to pump during the day and very supportive work environment. (R933)*

> *My nursing co-workers give me a lot of encouragement because they know how challenging it must be to only pump. They understand the time it takes. (R120)*

Many participants said that not having a designated place to pump at work would have made EPing worse. Some participants' workplaces provided other types of practical support, thereby creating opportunities for participants to pump:

> *I had an extremely supportive boss for breastfeeding and pumping – to the point that if I did not [breastfeed or pump] I would have felt judged. My work, as a physical therapist, is based on scheduling patients at specific time slots through the day. The receptionist was amazing at getting my pump times correct and working with me on that. (R820)*

> *My work has been really great. Plus I have my own office with a door. That has been invaluable, especially since I needed to pump 3 times a day for about 5 months after coming back to work. My workmates have also been great and, when appropriate, have let me join meetings by phone so I can keep to my pump schedule. If I hadn't had this flexibility, I'm not sure I could have lasted as long as I did. (R1488)*

> *Having a workplace that supports my need to pump during working hours is tremendous. I have a comfortable private room provided to me. I also have never been shamed or punished for taking breaks to pump. (R927)*

Support was also provided to uphold participants' rights to pump at work:

> *Sometimes I was able to pump in private in my office but when my office mate changed, I didn't feel comfortable asking the new arrival. So I used that as*

leverage to get the lactation room refitted instead. I didn't get to benefit much as by the time it was finished I was almost done EPing but at least other mothers will be able to use the much improved space. (R1459)

When I returned to work, my co-workers were very supportive. Around month 10, my manager came to me and told me I had a complaint that I was violating policies and taking advantage of my pump breaks. After some discussion, he determined that I was not violating any policies and told me he would talk to anyone who makes a complaint about the Federal Laws regarding lactating women. (R1227)

Several participants found it easier to pump at work than at home, or that there were at least benefits to it:

Also all of the additional time it takes out of my day is hard. It's easier now that I'm at work, but when I'm at home it's the last thing I want to do – I want to be with my baby instead of hooked to a machine. (R2184)

At work … [EPing is] a break from the stress. (R2266)

Lastly, one participant separated out different types of people in their workplace and provided these interesting observations:

- Male coworkers (who already had kids) understood that pumping at work was the only way to feed my baby. I think they just assumed I direct nursed at home, but they didn't ask and I didn't elaborate.

- Male coworkers (who didn't have kids) didn't want to know anything about it, and were visibly uncomfortable upon mention that I was going to pump at work or just finished pumping at work.

…

- Female coworkers were interested about my feeding journey in general, and mostly they weren't supportive or unsupportive, but rather they received and processed the information and then shared their journey/story with me. Rather emotionless for them.

- Human Resources at my company created a lactation room just before the arrival of my second child. After I gave birth to my first child, they provided me with a locked office located next door to the HR office. I worked at the same company for both children (3 years apart), but since the first child the company had placed more focus on women in the workplace and placed more value on providing a dedicated space for lactation. (R722)

6.8. Discussion

Most *BWN* study participants experienced a wide range of reactions in response to them EPing, with praise and admiration being common. However, they also carried the burden of having to justify why they were EPing rather than nursing or formula feeding and explain what EPing is. The attitudes of others are likely a manifestation of the cultural norms and social values (inner macrosystem) whereby some do not see the value in feeding human milk no matter the route, whereas others only see value in nursing at the breast. Many reactions to EPing seem to reflect the life stage of the reacting individual (chronosystem)—those who had a harder time comprehending EPing or its value often fell into two categories: never/not yet contemplated or far beyond having their own children. For example, it was more common for participants' own mothers and mothers-in-law to question whether EPing was either good enough (i.e., direct nursing was better) or worth it (i.e., formula feeding would be fine).

Nevertheless, participants' in-person social support experiences were most often positive, reflecting a general awareness that participants were expending immense time and effort to provide their child(ren) human milk. Spouses and partners were generally good sources of practical help, although it was not uncommon for participants to want more help from their partners. Most partners received praise for their encouragement and cheerleading, but, again, some participants expressed dismay at the lack of acknowledgement they received for their efforts. It may be that some partners, although willing to help, have been influenced by socioecological factors, such as social history or social, religious, and cultural norms (inner macrosystem), whereby non-birth/male caregivers are less involved in the direct care and feeding of children.

Participants' workplaces were generally supportive of EPing, with many of them offering designated places to pump and allowing for time within the work day to utilize them. Participants expressed challenges with having *enough* time, the logistics of transporting pump equipment back and forth between work and home, and feeling awkward about having to pump within their workplace. However, the fact that most participants did not have long periods of family leave (thanks to policies and law at the outer macrosystem level) interfered with their breastfeeding goals: for some participants, having to go back to work so soon became a barrier to establishing or improving direct nursing; for others, going back to work led to their loss of direct nursing. While the findings from this study as a whole demonstrate the critical need for high quality breast pumps for all those who want them, they should never be seen as a replacement for adequate paid family leave.

Reflecting findings in Chapter 5, there is also a critical need for LCs who are both knowledgeable and accepting of EPing. While some participants shared positive experiences of the support that they received from LCs, many accounts were not as positive. Poor care was experienced in relation to direct nursing support, especially during the postpartum hospital stay, and then in relation to EPing. While institutional factors (exosystem), such as too few hospital LCs in general, contributed to some participants' poor experiences, it was far more common for participants to feel unsupported as a result of the overwhelming preference for direct nursing within the culture of lactation consulting. This is exemplified by LCs' frequent focus on getting participants' children "back to the breast" even when that was not the goal of the participant and, through their critical comments or skeptical attitude, making participants

feel judged for EPing. Often, their comments and/or attitude stemmed from lack of knowledge, particularly in relation to the sustainability of EPing, causing participants to not have the information they needed about EPing when they first needed it. As examined in Chapter 5, this is a failure of the LC education system (outer macrosystem).

Conversely, the value of online support groups for *BWN* study participants cannot be overstated. Again, given the recruitment for this study, this is hardly surprising; what is perhaps a more relevant takeaway is *how* important these groups became for participants. For many, online support groups became subsumed in their microsystems and became their primary source of support, playing important psychological, social, and cultural roles in their breastfeeding journeys. In contrast to O'Connor and Madge's (2004) findings, online support groups largely replaced face-to-face communication with respect to EPing for *BWN* participants—the interpersonal processes of their breastfeeding support network were nearly exclusively digital. Contrary to Bartholomew et al.'s (2012) findings, *BWN* participants' self-efficacy and confidence *did* appear to be positively affected by participation in online support groups, perhaps reflecting Prescott and MacKie (2018), whereby EPers need a venue within which they could feel less alone and normalize the exceptional breastfeeding experience they were undergoing. In order to be successful, they had to create a supportive microsystem, favoring online support groups over in-person lactation support.

As communities of practice, members of these support groups not only received practical, informational, and emotional support, but also provided it. Through a shared concern and passion for EPing and a commitment to learn how to do it better through regular interactions with one another, *BWN* study participants feel pride in their EPing

accomplishments, with some even integrating EPing into their identity as parents and people, becoming lifelong advocates and supporters of breastfeeding without nursing.

Chapter 7. Conclusion

The data collected in the *Breastfeeding Without Nursing* study would fill approximately 10,000 pages if printed from Microsoft Excel; participants' open-ended responses to the initial survey alone amounted to over 500,000 words (five times the length of this dissertation). On average,[24] participants spent 42 minutes filling out the initial survey. Many participants expressed appreciation of and a desire to help others—especially in getting and sharing information—in their responses to Q177: *If there is anything else you would like to share about exclusive pumping or would like me to know, please type in the box below*. For example:

> *With all of the uncertainty and lack of information, participating in this survey was very meaningful for me. Thank you for the research you are doing. I really hope it develops into useful and resourceful information for women who struggle with breastfeeding, no matter the reason. (R700)*
>
> *You were right, taking this survey was very helpful and almost therapeutic to share my story. I hope it help other Moms who may have similar experiences! thanks:) (R713)*
>
> *Thank you so much for your research in this area! We need all the information we can get our hands on! (R2149)*
>
> *I think it is amazing that someone finally recognized the need for more information and studies done for EP. I am hopeful that this task you have taken on will be beneficial to many moms in the future! Thank you. (R739)*
>
> *I feel so passionate about this subject. If I can help in any other way please let me know. I'd be happy to participate in any way needed. (R855)*

I am not sharing the magnitude of the data I have collected and these incredibly complimentary comments to aggrandize myself or my research, but rather to demonstrate

[24] Excluding upper outliers, as calculated as any amount over [1.5 times the interquartile range plus the 75th quartile], or, 2 hours, 19 minutes. As participants were able to return to the survey at any point within the following 4 weeks, there were some very long durations.

the motivation and dedication that the participants had to improving the journeys of future breastfeeders—EPers especially—by sharing their own, often deeply emotional, experiences at length. This dissertation and the findings and themes presented in Chapters 3–6 could never do justice to the stories and experiences of the exceptional breastfeeders who participated in the *BWN* study.

That said, there are several findings and contributions that I want to reiterate the importance of. The first are relevant to those within the field of information science. Future research directions relating to this field are then suggested. Then important findings, recommendations for best practice, and future research directions relating to public health and lactation care will then be discussed before this chapter and dissertation concludes with some final thoughts.

7.1. Relevance of the *Breastfeeding Without Nursing* Study to Information Science

Three findings of particular interest to those in the field of information science include that of the relationship between information provision and future health behavior, the extension of the concept of incognizance, and the use of a socioecological framework. These are summarized next, followed by potential avenues of future information science research arising from the findings in the *BWN* study.

7.1.1. Significant Findings/Contributions

That information about EPing—experiential *and* clinical—on online support groups was of far higher perceived quality, in terms of both quantity and accuracy, than "expert" sources (namely LCs) is a novel finding, especially given past findings that parents prefer to get experiential information from other parents and clinical information from clinicians. The perception of usefulness (or not) of EPing information by LCs being

associated with seeking (or not) future medical help demonstrates the role of prior information provision in not only affecting future information behavior, but also future health behaviors. While this is not a novel finding, *BWN* study participants' degree of preference for non-clinical sources of information and the strength of association between the perceived usefulness of the information one has and their later health behavior illuminates the potential magnitude of this impact.

The findings of the *BWN* study also extend St. Jean's (2017) concept of incognizance to a new health-related topic and adds novel nuance to the purpose of education. While the provision of breastfeeding information alone has not been found to impact breastfeeding outcomes, providing information about EPing did indeed affect participants' outcomes. The crucial difference is pre-existing knowledge about a topic, however limited that might be: when people know *something* about a topic—even its existence *as* a topic—they are better able to discern *what* they do not know. More education is not required to provide the basic level of knowledge they need to discern what they do not know. In contrast, incognizance of a topic results in not even knowing *that* they did not know; thus, receiving additional education is vital to overcome incognizance.[25]

[25] An analogy may cement how this distinction is generalizable to other areas: Take two lifelong city-dwellers who are each being given a farm. They both have basic knowledge about how to tend a field, but go to different farming classes to learn more. However, they are not really much more successful at tending a field than others who did not attend a class, because it was hands-on skills and ongoing support, not knowledge, that they really needed. Now, assume that there are packs of wild llama on land adjacent to each of these person's farms, but neither person had ever heard of llamas or the use of their wool for clothes or meat for food. In one person's farming class, llama farming was mentioned and briefly explained; the other person remained completely incognizant of llamas. When both people are cold and hungry, the person who knew that llama farming was a "thing" is going to be much warmer and better fed than the person who did not even know that llamas were a potential resource.

The use of the socioecological model as an analysis tool extends the seldom-applied work of Kirsty Williamson (K. Williamson, 1998, 2005; K. Williamson & Manaszewicz, 2003). Merging Bronfenbrenner's (1977) and McLeroy's (1988) sociological frameworks—frameworks widely used in other fields—provides a robust and nuanced literature which can be utilized in future information science research. This would aid in developing and fully operationalizing a sociological model of information experience. In this dissertation, it was used to explore the influences not only on information needs and seeking in particular, but on information *experience* as a behavioral, cultural, social, affective, and emotional phenomenon.

7.1.2. Suggestions for Future Information Science Research

Future information science research on EPing along two paths is recommended: one continues with the investigation of EPing information experience, relating it to other forms of health and everyday life information seeking; the other relates to the theories, models, and frameworks within information science.

One line of information experience research concerns the lack of and/or poor quality of the information that *BWN* study participants received from LCs, with online support groups instead being the preferred source of information. Given the quasi-medical nature of breastfeeding information, what are the risks of receiving information from potentially untrained sources? If social media has become the preferred source of information about certain topics, how are those who do not or cannot participate on social networking sites affected? To what extent does prior poor information provision impact future information and health behaviors, as well as the cognitive and affective outcomes, of those who did not receive useful information from certain sources?

Even since gathering data for the *BWN* study between March 2017 and March 2018, social media accounts relating to EPing seem to have proliferated. For example, there are a number of influential Instagram accounts that provide EPing information and advice that did not exist a few years ago. These users have regular "Q&A" or "Live" events where breastfeeders can get instant answers to their questions; however, those hosting these events have no ability to ascertain details about individual attendees' situations that might be crucial to the relevance and safety of the advice that they give. These social media influencers are seen as subject experts, yet many do not have any lactation training. For many topics, this may not matter, but for some, it may be crucial. The role and impact of social media and its influencers pertaining to breastfeeding information and advice should be researched further.

Exploration of online EPing support groups as communities of practice would offer interesting insight into the structure, role, and in-group language and culture of EPing support groups. Comparing these features across different groups and assessing whether they are associated with different outcomes for their members could help to identify best practices for online support group creators, administrators, and moderators. By being able to identify optimal online support group features and member behaviors, those seeking online support may find a community to call home—and consequently, practical, informational, and emotional support—all the more expediently.

The finding pertaining to the role of education in overcoming incognizance can be explored further in relation to the evaluation of the role and purpose of education and its connection to information and knowledge. For example, if the purpose of an education intervention is to alleviate incognizance, how far does the provision of information alone

result in a successful outcome? If the purpose of an education intervention is to teach a complicated skill, however, then information alone would likely not be enough.

Lastly, the use of a socioecological perspective within information science has wide-ranging potential, all of which are ripe for future investigation. For example, the various systems within a socioecological framework could provide the structure for questions about individuals' information seeking behavior. Likewise, they can offer a framework for analysis, akin to what was implemented in this dissertation. Employing a socioecological approach to address information inequities and develop information programs and interventions would help to yield culturally-sensitive approaches rooted in the real-world experiences of the target individuals.

7.2. Relevance of the *Breastfeeding Without Nursing* Study to Public Health and Lactation

7.2.1. Significant Findings

Three findings are the most significant for those in the fields of public health and lactation: most EPers do not want to EP; EPing is, in fact, sustainable; and many LCs receive inadequate education about EPing. These are summarized here.

7.2.1.1. Most Exclusive Pumpers Do Not Want to Exclusively Pump

The vast majority of participants did not want to EP: only four participants out of 2,005 (0.2%) picked "just wanted to" as their only reason, with fewer than one in ten (7.9%) selecting this as one of their reasons for EPing. Almost all participants faced the choice between EPing and exclusive formula feeding, *not* between direct nursing and EPing. The perception that EPing is a "lifestyle" choice, simply a preference, or only appropriate for NICU breastfeeders or others unavoidably separated from their infant

does a disservice to EPers and their children. An understanding that EPers have likely been unsuccessful in meeting their breastfeeding expectations and goals and are therefore experiencing profound grief and guilt similar to any new parent who has not fulfilled their breastfeeding intention is of paramount importance.

The sheer determination to continue feeding human milk despite not being able to nurse indicates that public health campaigns raising awareness of the benefits of breastfeeding have been successful. However, the lack of motivation to lactate to protect their own health was clear, as was an awareness of ways to breastfeed other than nursing at the breast.

7.2.1.2. Exclusive Pumping is Sustainable

The *BWN* study demonstrated that, within a sample of EPers predominantly recruited from online support groups, EPing is sustainable over the long term, with many *BWN* study participants EPing for longer than average U.S. breastfeeding durations and a much higher "any breastfeeding" rate at 6 months postpartum. However, many participants had been told that EPing is only a short-term solution, that a child suckling at the breast was needed to sustain milk supply, or that a child empties the breast better than a pump does. Although the last supposition might have a ring of truth to it given that EPers usually have to pump for much longer compared to the duration of a nursing session by an *efficiently* nursing child, *efficiently* being the operative word here—a child who cannot or does not latch or suckle adequately neither empties a breast nor sustains a milk supply. EPing can and does offer a long-term solution, provided that practical, informational, and emotional support is present in the socioecology of the EPer.

7.2.1.3. Many Lactation Consultants were Inadequately Educated

Many *BWN* participants commented on the lack of education, especially regarding EPing, possessed by the LCs they interacted with. While EPers have taken matters into their own hands and have produced a number of informal online courses aimed at breastfeeders themselves, LCs do not have professionally-accredited equivalents. There are webinars and presentations on milk expression offered by organizations providing professional continuing education, but these have to be sought out by motivated and interested LCs. In addition, there are no suitable evidence-based books about EPing for LCs to use as a reference. While some LCs would indeed seek out continuing education, further formal training/certification, and/or written materials about milk expression if it were available, it is critical that education about milk expression, breast pumps, and EPing is incorporated into core breastfeeding training for all kinds of LCs, including peer supporters. Breastfeeders rely on LCs to provide them consistent, concise, clear, correct informational support for *all* forms of breastfeeding; the findings from the *BWN* study demonstrate that this is rarely the case concerning EPing. The finding that the less useful a participant perceived EPing information received from LCs to be, the less likely they were to seek medical help for an EPing-related breast health problem is alarming and should act as a call to action to provide more useful information.

7.2.2. Recommendations for Best Practice

These three significant findings give rise to recommendations for best practice, including the provision of breastfeeding support; inclusion of EPing information in breastfeeding education; improved counseling skills, attitudes, and EPing education; and the need for universal breast pump provision. These are now discussed in turn.

7.2.2.1. Breastfeeding Support Needs to be Plentiful, Consistent, Easy to Access, and Competent

Breastfeeding support, especially in the first few days and weeks postpartum, needs to be plentiful, consistent, easy to access, and competent. Many *BWN* study participants who wanted to nurse likely could have done so had they received the immediate and ongoing expert help they needed. Finding out that there were additional interventions that could have been tried in order to help them reach their breastfeeding goals, but were not even suggested, only serves to increase breastfeeders' grief, guilt, and anger.

7.2.2.2. Inclusion of Exclusive Pumping in Breastfeeding Education

Similarly, in my work as an LC and having presented my research at several conferences aimed at LCs, I have interacted with other LCs who vehemently believe that mentioning EPing in prenatal breastfeeding education somehow encourages prospective breastfeeders to EP. There are a number of reasons why this is misguided. Firstly, there is no evidence that this is the case: *BWN* participants whose prenatal education classes mentioned or explained EPing were no more or less likely to select "just wanted to" as a reason to EP. Second, participants who knew about EPing before they found themselves needing to do it fared better in a number of different areas, as described throughout this dissertation. Third, participants in this and countless other studies consistently express the need for breastfeeding education to be more realistic and more comprehensive about what to do when there are problems. Lastly, to withhold information about a (safe) infant feeding method simply because you do not think it is the optimal way to feed a child is clearly unethical. Information about EPing must be included in breastfeeding education provided by breastfeeders' own healthcare providers at the microsystem level, by

hospitals and other institutions at the exosystem level, and by public health campaigns at the inner macrosystem level.

7.2.2.3. Improved Counseling Skills and Attitudes Towards Exclusive Pumping

While most EPers in the *BWN* study wanted to nurse, it does not automatically mean that they want "back to the breast" advice upon seeking professional breastfeeding support. In fact, most participants expressed the contrary and rated "back to the breast" information as some of the least important when they first started to EP: once *BWN* study participants had settled on EPing, most did not want to try direct nursing again, perhaps because they did not want to go through the potential loss and grief of being unsuccessful a subsequent time. This stresses the importance of open-ended questioning and sensitive counseling skills during a lactation consultation in order to ascertain what both the aspirational and realistic goals of the individual breastfeeder are. Advice and breastfeeding plans offered should be practical and goals attainable, with potential pitfalls and problems explained. That is not to say that positivity should be discarded—quite the contrary, as many *BWN* study participants would have appreciated a great deal more positivity about not nursing and/or about EPing from their HCPs and LCs. Dietrich Leurer et al. (2019) summarized breastfeeding counseling best practices perfectly:

> As part of routine breastfeeding support, HCPs should assess for expression education and psychosocial needs at each interaction, offering nonjudgmental guidance that assists mothers to make evidence-informed decisions regarding appropriate expression consistent with the goals of the mother. Failure to do so may be a missed opportunity to discuss commercial messaging, problem solve, and teach about influences on duration within the context of each mother's needs and motivations. (p. 8)

One finding from the *BWN* study that has already proved (through my conference presentations and resulting discussions with attendees) impactful in changing the attitudes

of LCs is knowing that EPing can be a long-term breastfeeding option. To profess otherwise ignores the unequivocal findings of the *BWN* study and damages the confidence and self-efficacy of those who breastfeed without nursing. It is important to communicate that EPing is not an easy or lazy breastfeeding option—many *BWN* study participants expressed that EPing was one of the hardest things that they ever did and those who successfully nursed later children overwhelmingly felt that nursing was far easier. Despite this, when asked whether they would EP for a future child if that child could not successfully nurse, 90.7% (1,341/1,478) said that they would, demonstrating that the hard work involved would not deter them from EPing again.

7.2.2.4. Improvement of Education for Lactation and Health Care Providers

To be able to provide competent breastfeeding support requires HCPs and LCs to have the right knowledge, not just the right attitude and counseling skills. Until formal education and resources on EPing are developed, LCs have a duty to utilize the resources that are available to learn about EPing. Taking continuing education courses as mentioned above, reading EPing blogs and websites, and reading the few books that are available (listed in Appendix 8), although directed at breastfeeders and not LCs, still provide useful information. These activities would also better prepare LCs to counsel and advise EPers, given that they would have insight into the information needs of EPers and any potential misinformation or concerning practices being propagated within the EPing community.

Other informal sources of EPing information can also be educational. For example, pump and accessory manufacturers often have active social media accounts such as Instagram or Facebook pages. Many pump manufacturers welcome discussions

about their products, especially with LCs. Of course, these commercial entities could never be considered neutral, but it is vital that LCs stay up to date on what tools and technologies are available. Hospital LCs are especially vulnerable to a lack of information about breast pump products, as hospitals often have contracts with only one breast pump/accessory brand and therefore receive little-to-no information about other options. Unfortunately, the two or three breast pump brands that have the hospital market cornered do not, for example, offer an adequate range of sizes or styles of flanges, thereby perpetuating breast/nipple problems relating to pumping. Nevertheless, breastfeeders who pump—whether exclusively or not—will find out about pumps and accessories for themselves and will often ask LCs for their advice and opinions about them, therefore possessing this knowledge is important. While recommending commercial products risks a conflict of interest, especially in light of IBCLC and CLC codes of ethics, at the very least discussing them is unavoidable if LCs are to provide comprehensive, high quality care to their pumping clients.

Scientific literature is also not completely devoid of findings about milk expression and EPing, though I would caution against the general application of outdated, NICU, or non-exclusive pumping findings to EPing, as these have given rise to some of the myths surrounding EPing (e.g., only needing to pump for 15–20 minutes, which might work for supplementary pumping, but is not often the case for EPing). The literature reviewed throughout this dissertation offers some resources, but more research is desperately needed.

7.2.2.5. Universal Prenatal Breast Pump Provision

Lastly, there are some HCPs, LCs, and those in public health fields who do not feel it is appropriate or necessary for breastfeeders to already have a breast pump ready for immediate postpartum use should the need—or desire—arise, that somehow a breast pump will interfere with "physiological adaptation of maternal milk production to infant milk consumption, and thus negatively impact the establishment of breastfeeding" (Crossland et al., 2016, p. 734). Only in an ideal world are direct nursing problems resolved or a breast pump for home use arranged during the postpartum hospital stay, as demonstrated by the experiences of a disturbingly large number of participants who received wholly inadequate lactation support during this time and/or were released from hospital with a newborn who would not latch but were not given an alternative feeding plan. Given that most *BWN* participants EPed because they experienced problems with latching in the immediate postpartum period, already having a breast pump likely increased the likelihood that their newborns received human milk: without a breast pump, these infants would have either received only formula or suffered adverse consequences from dehydration and malnutrition. Initial pump use was not really a choice (other than between human milk and formula) for most *BWN* study participants; long-term pump use is not a symptom of having a breast pump, but rather of a lack of ongoing lactation care to support these breastfeeders in their efforts to nurse, if that is their goal.

7.2.3. Future Research Directions for Exclusive Pumping as a Method of Breastfeeding

There is a great deal of data from the *BWN* study that has yet to be published and/or analyzed, for example, longitudinal data from the follow-up surveys. These provide an unrivaled opportunity to examine the lived experience of EPers over time.

Other data most relevant to those in fields of public health and lactation that was collected but is, as yet, unexplored concern experiences of formula feeding, introduction of solid food, and breast pump usage. While topics for which *BWN* study data do not exist and need further exploration were noted throughout this dissertation, they are summarized here, together with additional suggestions for future research.

There are several important unanswered questions regarding EPing as a method of breastfeeding. In 2011, Bartok suggested that "future research with larger samples will be needed to carefully evaluate longer-term growth patterns in infants fed breastmilk by bottle" (p. 117). A study of this nature has yet to be conducted. With EPing growing in prevalence, there is more need than ever to conduct a longitudinal study exploring the health, developmental, emotional, and psychological impact of EPing on both children and EPers themselves.

There are a plethora of data points, impossible to include in a survey-based study, that should be included in future studies. For example, quantitative data on EPers' physical attributes, such as height, weight, and breast and nipple size and shape, is essential to assessing whether certain attributes affect breastfeeding outcomes and experiences. Accurate data on milk supply, together with how many pumping sessions EPers were doing per day, how long they each were, and which pumps and accessories they were using, would lead to evidence-based suggestions on pumping schedules.

Assessing the macro- and micronutrient composition of EPers' milk over time, with the ability to compare these findings to both nursing breastfeeders and EPing-specific data points (e.g., pump type, pumps per day, how equipment is washed), will be essential to optimize the health benefits of bottlefed human milk (i.e., bring it as close to

the composition of nursed human milk as possible). Another critical area of research concerns the mechanics of bottlefeeding itself. While Boone et al. (2016) found some negative effects of bottlefeeding human milk versus direct nursing, their findings were limited in scope. Furthermore, no study has yet compared different bottlefeeding practices, for example, feeding while an infant is upright versus laid down or paced versus non-paced feeding, in relation to human milk feeding specifically; in fact, studies on bottlefeeding practices are incredibly limited in general.

Currently, no rigorous or independent testing of breast pumps or breast pump accessories occurs: there is no objective verification of the information provided by manufacturers. Breast pump users have few places to turn for information about pumps, with the few places that do exist often dominated by social media influencer reviews or non-independent/sponsored representatives. The potential impact of a breast pump testing project would be enormous, given that the vast majority of breastfeeders in high-income countries express milk at some point, usually with a breast pump. In low- and middle-income countries, where breastfeeding is even more critical to population health, an increasing number of breastfeeders go back to work soon after having a baby yet have little-to-no access to efficient milk expression technology. Objective data on pump performance and the effects on the milk itself are crucial to decision-making about breast pump provision and use, especially when resources are limited and/or population health more precarious.

Lastly, while *BWN* study data and findings from other studies indicate the grief and trauma that result from being unsuccessful in meeting breastfeeding intentions and goals, the nuance of whether EPing attenuates or amplifies these feelings was not

discernable from the *BWN* data. The question of how far EPing goes to fulfilling these breastfeeding intention and goals remains unanswered. These questions, as well as the long-term consequences of breastfeeding grief and trauma, deserve to be the focus of future research.

7.3. Final Thoughts

When I had my daughter almost exactly 4 years ago, little did I know that it would change the trajectory of my life and lead me to a topic that I easily could (and hopefully will) spend the rest of my life researching. The *Breastfeeding Without Nursing* study was an important contribution to the limited existing knowledge about the lived experiences of EPers. This dissertation merely scratches the surface, revealing themes within of four important domains—EPing circumstances, affective experiences, information, and support—running through the study findings and enabling identification of the most important areas for future research. Given the interdisciplinary nature of the *BWN* study, there are implications for best practice and future research in a number of different fields.

My core values as a researcher are to use my skills, interests, and abilities to contribute valuable insights and solutions to real world problems. I hope that the *BWN* study, and my continuing scholarly work, will have a bigger impact beyond just my findings: as the largest study (that I know of) on EPers and one of the only that explores their lived experiences, it offers unparalleled insight into this growing community of determined, dedicated, and hard-working breastfeeders. By examining the inequities faced by this often-misunderstood community and identifying the gaps in EPing information, education, and knowledge, the support that EPers need and deserve, but

seldom receive enough of, can be vastly improved. In an ideal world, all breastfeeders should be able to completely fulfill their original breastfeeding intentions and goals, but for a variety of reasons, this is just not a realistic outcome. When EPing becomes the *only* way a breastfeeder can feed their child, it is vital that all those who support breastfeeding, but especially LCs, HCPs, and peer supporters, provide practical, informational, and emotional support of the highest quality to prevent the double letdown of nursing failure together with poor lactation support for the only alternative that still enables these breastfeeders to feed their own milk to their child.

Appendix 1. IRB Approvals

UNIVERSITY OF MARYLAND
INSTITUTIONAL REVIEW BOARD

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DATE:	March 7, 2017
TO:	Fiona Jardine
FROM:	University of Maryland College Park (UMCP) IRB
PROJECT TITLE:	[1026503-1] The Importance of Information in the Long-Term Success of Exclusively Pumping Breast Milk
REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	March 7, 2017
EXPIRATION DATE:	March 6, 2018
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # 7

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of March 6, 2018.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

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DATE:	February 18, 2018
TO:	Fiona Jardine
FROM:	University of Maryland College Park (UMCP) IRB
PROJECT TITLE:	[1026503-4] The Importance of Information in the Long-Term Success of Exclusively Pumping Breast Milk
REFERENCE #:	
SUBMISSION TYPE:	Continuing Review/Progress Report
ACTION:	APPROVED
APPROVAL DATE:	February 18, 2018
EXPIRATION DATE:	March 6, 2019
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # 7

Thank you for your submission of Continuing Review/Progress Report materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of March 6, 2019.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Appendix 2. Recruitment

Table 13. Avenues of recruitment for study participants

Avenue	Approximate Members/ Subscribers 03/2017[a]
Facebook groups	
Exclusive Pumping: Breastfeeding Without Nursing	3,800
EP-BWN: Off Topic Forum	1,300
Exclusive Pumping Mums	22,200
Exclusively Pumping Mamas[b]	9,100
Exclusively Pumping Moms PRIVATE GROUP	16,500
Hack the Breast Pump	2,000
Extended Breastfeeding for Exclusive Pumpers	160
Exclusively Pumping Mamas[b]	1,600
Exclusively Pumping Moms – Exclusive Group	2,000
Life After the Pump	2,000
Queer Mamas*	16,800
TheBump.com breastfeeding message board	Unknown
La Leche League International Exclusively Pumping forum	Unknown
WhatToExpect.com Exclusive Pumping forum	11,800
ExclusivePumping.com newsletter	3,000
BabyCenter.com The Exclusive Pumpers! group	33,000

Notes

[a] Many EPers are members of multiple Facebook groups, so these numbers do not reflect a discreet number of people.

[b] There are two identically named Facebook groups.

Appendix 3. Invitation to Participate in the Initial Survey

I'm writing to ask you to participate in an online survey which focuses on the experiences of mothers who currently exclusively pump (EP) breast milk or have done in the past.

I am a PhD student at the College of Information Studies, University of Maryland. I am conducting the (to my knowledge) first ever academic research on EPing. Your response is essential to help me and many other people better understand EPing. As this research aims to help to identify the information that would be useful to EPers, one of the future benefits could be that women are provided with correct information about EPing earlier when it can be of the most use to them.

Please click the link below to go to the survey (or copy and paste the link into your browser). The survey takes about 30–45 minutes to complete and, if you're currently EPing, you will be invited to participate in follow up surveys.

Survey link: https://umdsurvey.umd.edu/SE/?SID=SV_4OfVvAxPG6XLYRT

Please note that the survey may not load if you have ad or tracker blockers installed.

Your participation in the survey is completely voluntary and all of your responses will be kept confidential. You must be 18 years old or older to participate. No personally identifiable information will be associated with your responses to any reports of these data. The University of Maryland Institutional Review Board has approved this survey.

Should you have any comments or questions, please feel free to contact me at fjardine@umd.edu.

Thank you very much for your time and participation.

Sincerely,

Fiona Jardine

Appendix 4. Open-Ended Survey Questions

The following questions comprise the open-ended survey questions to which participants provided narrative responses:

- Q41/57/75/94: *I am interested in the circumstances around feeding your child(ren) formula (e.g., waiting for milk to come in, low supply, extra calories, etc.). If you'd be willing to share them with me, please do so here.*
- Q100: *I would love to hear why you exclusively pump(ed) in your own words. If you would like to, please tell me your story. You can write as much or as little as you want.*
- Q115: *In your own words, please share how you have learned about EPing. Where do or did you go to ask questions? Did you get helpful answers? How do you feel about using those sources of information?*
- Q117: *What unanswered questions do you still have about EPing? Where have you looked for answers?*
- Q126: *What reactions have you experienced when you have told others that you are/were exclusively pumping? What are some of the things others have said to you?*
- Q137: *In your own words, please explain your feelings about your EPing experience. How did you feel when you first started? How do you feel now? If you have weaned from the pump, how did you feel during the period of time you EPed?*
- Q138: *What would have made your experience of EPing* ***better?***
- Q139: *What would have made your experience of EPing* ***worse?***

- Q170: *If you're willing, please share more details about your experience of PPD and/or PPA here.*
- Q177: *If there is anything else you would like to share about exclusive pumping or would like me to know, please type in the box below.*

Appendix 5. Milk Supply Codes

In relation to each of their EPing journeys, participants were asked Q36/52/67/87:[26] Not including the time when your breast milk was first coming in or while you were intentionally weaning off the pump, how would you describe your milk supply? Their free-text responses characterized their milk supply as an undersupply, just enough, an oversupply, or a combination of these. Participants' responses were given a numerical code, as show in Table 14, aimed to be an approximate representation of their overall supply. The number of EPing journeys associated with each category is also provided.

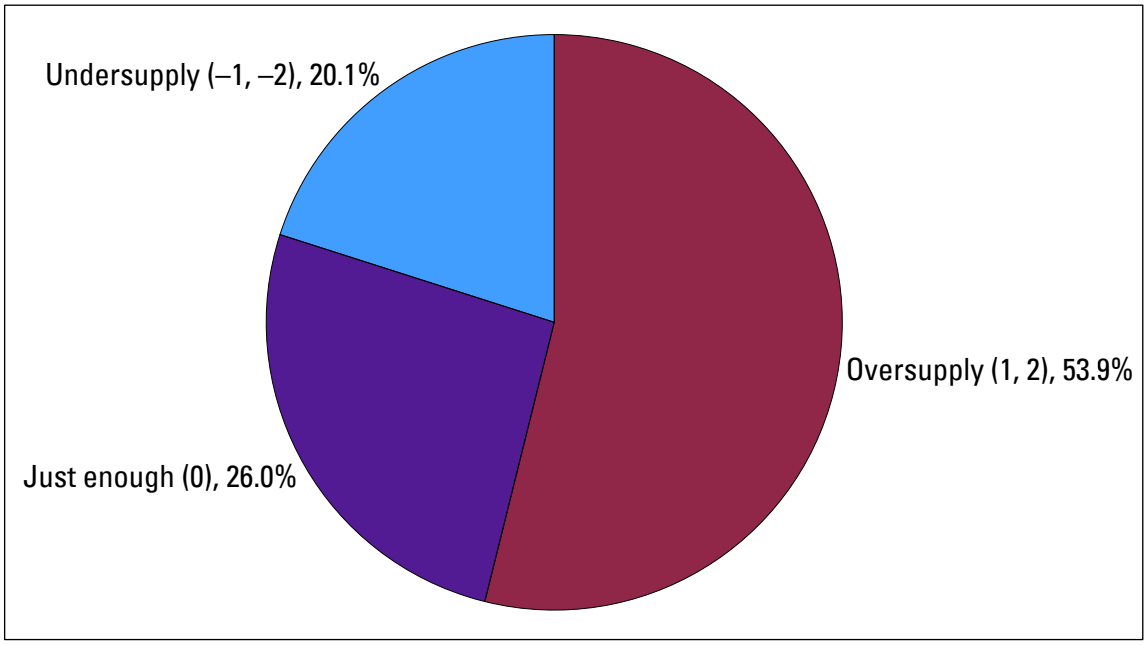
Table 14. Responses to Q36/52/67/87: *Not including the time when your breast milk was first coming in or while you were intentionally weaning off the pump, how would you describe your milk supply? And numerical codes assigned to each combination; responses given per EPing journey* (*n* = 1,973)

Milk supply description	Code	n	%
Undersupply	–2	261	13.2
Undersupply + just enough	–1	135	6.8
Just enough	0	336	17.0
Just enough + undersupply + oversupply	0	85	4.3
Oversupply + undersupply	0	93	4.7
Oversupply + just enough	1	302	1.6
Oversupply	2	761	58.9

[26] There were four different survey questions that asked this same question, but contained in four different question "blocks:" currently EPing for one child, currently EPing for two or more children, EPed in the past for one child, and EPed in the past for two or more children.

Figure 26 displays the proportion of EPing journeys in each numerical code group and clearly shows that approximately one in five (20.1%; 396/1,973) EPing journeys was connected with *overall* milk undersupply. Far more common was milk oversupply, either on its own or in combination with producing just enough, demonstrating that milk supply is not automatically an issue for long-term EPers.

Figure 26. Proportion of EPing journeys in each numerical milk supply code group (*n* = 1,973)



Appendix 6. Calculation of Exclusive Pumping Journeys

The duration of participants' EPing journey were calculated by deducting the answer to Q66/Q85: *How old was this child/these children when you first started EPing?* from Q68/Q87: *How old, in months, was this child/these children when you weaned from the pump?*. This was problematic because the possible answers to the first question were time ranges (Table 15). In order to extract data in the form of months so as to calculate an EPing duration, I assigned the highest value to each answer, as shown in Table 15.

Table 15. Assigned exclusive pumping start points in months

Answer on survey	Highest start point	Assigned start point # of months
Less than 1 week	1 week	0.25
1 – 2 weeks	2 weeks	0.5
2 weeks – 1 month	1 month	1
1 month – 2 months	2 months	2
2 months – 4 months	4 months	4
4 months – 6 months	6 months	6
More than 6 months	Excluded from analysis	

This method was chosen so that EPing durations were not overestimated—they would be at least the length of (*How old in months was this child when you weaned from the pump?*) minus (*How old was this child when you first started EPing?*). For example, if a participant reported that they started EPing between 1–2 weeks (assigned value = 0.5 months) and weaned off the pump at 6 months, their EPing duration would be calculated at 5.5 months. Unfortunately, because it was impossible to tell the start date of those who

started EPing when their child was more than 6 months old (n = 9), these participants had to be excluded from any analysis involving EPing duration.

Appendix 7. Emotions from Survey Question 136

The following 56 emotions were provided as potential responses to Q136 in the initial survey. They were presented in random order to each participant, but presented here in descending order of popularity.

Table 16. Responses to Q136: *Below is a list of feelings and emotions. Select all those that you have ever felt about EPing* (*n* = 1,655)

Emotion	*n*	%
frustrated	1099	66.4
challenged	907	54.8
discouraged	876	53.0
productive	843	51.0
disappointed	840	50.8
devoted	838	50.7
strong	824	49.8
grateful	820	49.6
restricted	815	49.3
burdened	779	47.1
lonely	762	46.1
anxious	760	45.9
loving	755	45.6
happy	740	44.7
hopeful	719	43.5
inadequate	708	42.8

capable	703	42.5
sad	657	39.7
guilty	614	37.1
resentful	593	35.9
envious	585	35.4
depressed	582	35.2
caring	576	34.8
miserable	572	34.6
focused	550	33.3
pissed off	531	32.1
detached	525	31.7
embarrassed	511	30.9
angry	509	30.8
unmotivated	502	30.4
cheated	476	28.8
bitter	471	28.5
insecure	455	27.5
uncertain	450	27.2
controlled	384	23.2
powerless	367	22.2
adequate	362	21.9
grieving	343	20.7
vulnerable	342	20.7
confused	340	20.6
regretful	321	19.4

hurt	289	17.5
ashamed	286	17.3
indecisive	267	16.1
rejected	267	16.1
lazy	257	15.5
scared	220	13.3
worthless	219	13.2
humble	217	13.1
apologetic	215	13.0
belittled	171	10.3
defiant	139	8.4
abandoned	121	7.3
apathetic	80	4.8
intimate	76	4.6
uncaring	46	2.8

Appendix 8. Books and Guides on Exclusive Pumping

Books were not considered useful sources of information about EPing. There are a limited number of books—print and/or electronic—on pumping, of which very few focus on milk expression and/or EPing. At the time data was collected for the *BWN* study (March 2017 – March 2018), only one English-language book addressing EPing specifically (Casemore, 2014) was available without digging through pages of Amazon.com results to find some of the short, often-personal, accounts of EPing listed in the table below. All (to the best of my knowledge) the books currently available and written in English that focus on milk expression are described in Table 17. It is apparent from this table that most books on pumping and EPing were written by EPers themselves with little-to-no formal training in lactation science or breastfeeding support. That is not to say that they are not well-written or useful, but that many do not take an evidence-based approach and base their suggestions on their own experiences and/or anecdotal data (i.e., what they have seen or heard works for others).

Many provide advice or recommend products in ways that would be unethical for professional LCs to do (e.g., recommending dietary supplements without providing data as to their potential effectiveness or side-effects, endorsing certain commercial products). The few that are written by LCs focus on pumping as a supplement to direct nursing. Only one book has LCs as their intended audience (*Clinics in Human Lactation: Pumps & Pumping Protocols* by Marsha Walker), but it is outdated, could be laid out more clearly, and focuses on pumping as a supplement to direct nursing. Combining the lack of EPing research and resulting empirical data, the absence of a formal qualification demonstrating EPing knowledge and support, and the lack of professionally written, evidence-based reference texts about EPing, it is no wonder that many *BWN* study participants found LCs to be poorly educated on this topic.

Table 17. Currently available, English-language books specifically about milk expression and exclusive pumping

Title	Author(s) & *qualification(s)*	Year	Publisher & *price*	Pages	Target audience	Details
This Sucks, Pump Like a Pro A Practical Guide to Exclusively Pumping: Everything I Learned while Exclusively Pumping for Twins						
	Frances, Leah *EPer, blogger*	2020	Self-published *eBook: 9.99*	96	EPers	• Overview of EPing • Written from personal experience
ExclusivePumping.com Guides: Exclusive Pumping Schedule Workbook; Exclusive Pumping 101; Exclusive Pumping and Milk Supply; Weaning from the Pump						
	Glenn, Amanda *EPer, blogger*	Unclear/ various	Self-published *eBooks available on author's website only for between $5–12*	Between 37–42 each	EPers	• Targeted guides on EPing topics • Some topics based on informally collected data
Exclusive Pumping Mama!: Complete Guide To Make You Successful At Pumping!						
	Lancaster, Shelby *EPer, blogger*	2019	Self-published *Paperback: 5.99* *eBook: 2.99*	34	EPers	• Short overview of EPing • Written from personal experience
Go Milk Yourself: You Have Power. Express It!						
	Webb, Francie *IBCLC-in-training*	2017	Self-published *Paperback: 14.97*	230	Breastfeeders	• Focuses on hand expression

Title	Author(s) & *qualification(s)*	Year	Publisher & *price*	Pages	Target audience	Details
			eBook: 9.99			• Also a motivational self-help book
Breast Pumps and Business Suits: A Practical Guide to Breastfeeding and Working						
	Nel, Sanja *Registered Dietician, South African Certified Lactation Consultant*	2017	Self-published *eBook: 3.99*	78	Breastfeeders who pump and work	• Focused on pumping at work/out of the house and as a supplement to direct nursing
Breastfeeding, Pumping and Working: The Mom's Survival Guide For Successful Breastfeeding, Pumping and Returning To Work						
	Thomas, Tracy *Breastfeeder*	2016	Self-published *Paperback: 14.99* *eBook: 4.99*	68	Breastfeeders who pump and work	• Focused on pumping at work/out of the house and as a supplement to direct nursing
Expressing Your Milk: Excerpt from Working and Breastfeeding Made Simple						
	Mohrbacher, Nancy *IBCLC, FILCA*[a]	2016	Praeclarus Press *Paperback: 6.00*	118	Breastfeeders who pump and work	• Focused on pumping at work/out of the house and as a supplement to direct nursing
Work. Pump. Repeat.: The New Mom's Survival Guide to Breastfeeding and Going Back to Work						

Title	Author(s) & *qualification(s)*	Year	Publisher & *price*	Pages	Target audience	Details
	Shortall, Jessica *Writer, speaker*	2015	Harry N. Abrams *Hardcover: 14.39* *eBook: 9.99*	208	Breastfeeders who pump and work	• Focused on pumping at work/out of the house and as a supplement to direct nursing • Written from personal experience
Exclusively Pumping Breast Milk: My Journey of Exclusively Pumping Breast Milk and Formula Supplementation						
	Winters, Elena *EPer*	2014	Self-published	34	EPers	• Short overview of EPing • Addresses formula supplementation • Written from personal experience
Exclusively Pumping Breast Milk: A Guide to Providing Expressed Breast Milk for Your Baby						
	Casemore, Stephanie *EPer*	2014	Gray Lion Publishing *Paperback: 16.95* *eBook: 9.99*	284	EPers	• A text-heavy description of EPing • Written from personal experience
Exclusive Pumping: A Breastfeeding Mother's Unconventional Approach						
	Anthony, Robyn *EPer*	2013	Self-published *eBook: 2.99*	139	EPer	• Overview of EPing • Written from personal experience
Feeding Little Bunny Foo Foo: A Journey into Exclusively Pumping						

Title	Author(s) & *qualification(s)*	Year	Publisher & *price*	Pages	Target audience	Details
	Self, Kelley *EPer*	2013	Self-published *eBook: 0.99*	24	EPers	• Short overview of EPing • Written from personal experience
Practical Pumping: A 20 Minute Get-Started Guide for Breastfeeding and Pumping in the Workplace						
	Montross, Rebecca *Unknown*	2013	Self-published *eBook: 2.99*	29	Breastfeeders who pump and work	• Focused on pumping at work/out of the house
How to Survive Pumping: Tips to Make Expressing Breast Milk Easier on You						
	Daggett, Jennifer *EPer*	2013	Self-published *Paperback: 5.99* *eBook: 2.99*	26	EPers	• Short overview of EPing • Written from personal experience
Clinics in Human Lactation: Pumps & Pumping Protocols						
	Walker, Marsha *Registered Nurse, IBCLC*	2012	Hale Publishing (now Praeclarus Press) *Paperback: 14.95*	156	LCs	• Focused on pumping at work/out of the house and pumping as a supplement to direct nursing
Breast or Bottle? A Woman's Guide to Pumping: The Alternative Method of Breastfeeding						
	Kelman, Vanessa	2012	Self-published *eBook: 0.99*	25	EPers	• Short overview of EPing • Written from personal experience

Title	Author(s) & *qualification(s)*	Year	Publisher & *price*	Pages	Target audience	Details
The Pumping Mom - Your Complete Guide to Pumping Breast Milk						
	Long, Shauna *EPer*	2010	Zion Marketing, LLC *Paperback: 29.97* *eBook: 9.97*	165	EPers	• Overview of EPing • Written from personal experience
Pumping Breast Milk Successfully						
	Stafford, Susan *Unknown*	2003	Luniverse, Inc. *Paperback: 14.50*	154	Breastfeeders who pump	• Overview of different types of pumping

Notes. Price, in U.S. dollars, is for a new copy bought from Amazon.com on April 13, 2020. Books are listed in date order, with the most recent first.
[a] Fellow of the International Lactation Consultants' Association

Appendix 9. Initial Survey Instrument

Introduction

Exclusive Pumping Survey

Thank you for your interest in completing this survey about exclusive pumping!

Why am I Researching Exclusive Pumping?
My research is a result of my own experience. I had my beautiful baby girl in April 2016 and unfortunately, due to a variety of obstacles, my baby and I were not able to establish a direct breastfeeding relationship. I was devastated that we would never have the "gold standard" of baby nutrition, bonding, and comfort, but was still determined to give her breast milk any way I could. I knew vaguely how to express milk with a breast pump, but had little clue how to do it as the sole means of extracting milk, despite having taken a breastfeeding class, spoken at length about breastfeeding with our doula, and done a great deal of online research on the topic. After additional online research, I discovered the term "exclusive pumping" (EP, EPing, EPer) at about two weeks postpartum. Through social media, specifically Facebook groups, I learned how to sustainably EP, received answers to specific questions, and felt understanding and support for my situation. My overall research goal is to study the information behavior, that is, information needs, seeking, and use, of EPers.

Purpose of this Study
This research is being conducted by Fiona Jardine, a PhD student under the supervision of Dr. Beth St. Jean, at the University of Maryland, College Park. I am inviting you to participate in this research project because you are or were an EPer.

Breast milk is seen by mothers, health care providers, and public health organizations as optimal nutrition for infants. However, a variety of external barriers to breastfeeding exist, such as problems establishing a latch, getting milk to flow, or poor infant weight gain, as well as internal barriers, such as a perception that breast milk alone is not sufficient and a desire for caregivers to be involved in infant feeding. EPing can provide the solution to many of these barriers while still providing the benefits of feeding breast milk. Given the complete lack of data on EPing in any academic field, my research will collect both qualitative and quantitative data from EPers, especially focusing on the information needs of EPers, how they seek that information, where they ultimately find it, and how they use it. Initial data collection will be through an online survey. I aim to show the important role EPing could have in increasing the incidence and duration of breastfeeding provided mothers have the right information at the right time. By demonstrating the importance of information, my long-term goal is to impact what is included in the breastfeeding information provided both prenatally and postpartum to mothers.

Procedures
The procedures involve completing this online survey, which is expected to take **approximately 30–45 minutes**. You can **save your progress** and come back to the survey at any time. The survey asks questions about your experience of EPing. Some example questions are:

- How old was your child when you started EPing?
- Why did you EP?
- Where did you find information about EPing?
- Did you have a choice about your primary breast pump?

With a few exceptions needed to show you the correct questions, **you do not have to answer any questions** in this survey. At the conclusion of the survey, if you are currently EPing you be invited to participate in the second phase of this study involving follow up surveys.

Potential Risks and Discomforts
There are no known or foreseeable risks inherent in completing the survey. You may experience negative emotions when faced with questions about your breastfeeding

journey and/or postpartum experience: no questions that could possibly pose this risk are mandatory and **you are free to exit the survey at any time**.

Potential Benefits
There are no direct benefits from participation in this study. However, you may feel a sense of relief or catharsis from the act of sharing you story. In addition, I hope that, in the future, other people might benefit from this study through improved understanding of EPing. As this study aims to help to identify the information that would be useful to this population, one of the future benefits could be that women are provided with correct information about EPing earlier when it can be of the most use to them.

Confidentiality
Any potential loss of confidentiality will be minimized because the data is secured through the Qualtrics survey software, which assigns you a random participant number, rather than identifying your responses by your name. No attempt will be made to gather identifying information about you. The exception is if you indicate you are willing to participate in follow-up surveys: you will be asked to provide you email address so I can contact you in the future. While your responses will be linked from survey to survey through a participant ID number so trends can be identified, your name will never be gathered.

After the surveys close, the data will be downloaded from the Qualtrics server to my personal computer, which is password-protected, and backed up to cloud-based storage, which is also password-protected. Dr. Beth St. Jean, my thesis advisor, will have access to the data in addition to me.

Data from this study will be kept until the end of 2025 so that it can be analyzed in its entirety. At that time, the data will be securely destroyed.

If I write a report or article about this study, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if I am required to do so by law.

Right to Withdraw and Questions
Your participation in this study is completely voluntary. If you decide to participate in this study, you may stop participating at any time.

If you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:

Fiona Jardine
College of Information Studies
University of Maryland
College Park, MD 20742
fjardine@umd.edu, 301.602.3936

Participant Rights
If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:

University of Maryland College Park
Institutional Review Board Office
1204 Marie Mount Hall
College Park, MD, 20742
irb@umd.edu, 301.405.0678

This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

You can download a PDF version of this statement of consent here.

Statement of Consent
By clicking "Yes," below, you indicate that you are at least 18 years of age, you have

read this consent form or have had it read to you, your questions have been answered to your satisfaction, and you voluntarily agree to participate in this research study.

If you agree to participate, please answer "Yes" to the question below to continue with the survey.

- ○ Yes
- ○ No

Are you an EPer?

For the purposes of this research, **"exclusively pumping" means only expressing breast milk to feed your baby and not directly nursing your child at the breast.**

You **may or may not supplement** with formula, donor milk, and/or solids. Whether your own breast milk makes up 1 or 100% of your baby's intake, if that milk is pumped from your breasts, then you are an EPer.

If you have nursed at the breast, whether for nutrition or solely comfort, you can still answer this survey if you currently or previously met the definition of EPing above.

Have you ever EPed breast milk?

- ○ Yes
- ○ No

Demographics

About You

What year were you born?

(yyyy)

What is the highest level of education you have completed?

- ○ Less than high school diploma
- ○ High school graduate (high school diploma or equivalent including GED)
- ○ Some college but no degree
- ○ Associate degree
- ○ Bachelor's degree
- ○ Some graduate or professional school
- ○ Master's degree
- ○ Doctoral or professional degree (PhD, JD, MD)
- ○ Other (please explain)
- ○ I prefer not to answer

Are you currently pursuing a degree or other formal education/qualification?

- ○ Yes (please explain)
- ○ No
- ○ I prefer not to answer

What is your race?

(check all that apply)

- ☐ White
- ☐ Black or African-American
- ☐ American Indian or Alaska Native
- ☐ Asian

- [ ] Native Hawaiian or Pacific Islander
- [ ] Other (please explain)
- [ ] I prefer not to answer

What is your ethnicity?

- ○ Hispanic or Latinx
- ○ Not Hispanic or Latinx
- ○ Other (please explain)
- ○ I prefer not to answer

What best describes your current relationship status?

- ○ Single (never married, not in a relationship)
- ○ In a committed relationship (but not legally married)
- ○ Married
- ○ Widowed
- ○ Divorced
- ○ Separated
- ○ Other (please explain)
- ○ I prefer not to answer

In which country do you currently reside?

In which state do you currently reside?

How many children have you given birth to?

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more
- ○ I prefer not to answer

What are the birth month and year of your child/children?

(mm/yyyy)

1st child	
2nd child	
3rd child	
4th child	
5th child onwards *(please write birth months and years for all the rest of your children in this box)*	

Are you currently pregnant?

- ○ Yes
- ○ No
- ○ I don't know
- ○ I prefer not to answer

How many weeks pregnant are you?

Are or were you a grief pumper?

A grief pumper is a woman who pumps breast milk after she has lost her child.

- ○ Yes, currently
- ○ Yes, previously
- ○ No
- ○ I prefer not to answer

Grief Pumper Disclaimer

You have indicated that you are or were pumping breast milk after the loss of your child/children. Please accept my sincerest condolences for your loss and great admiration for your pumping journey.

You are encouraged to answer the rest of the survey. However please be aware that, although I have tried hard to make the questions as neutral as possible, they do assume that the child/children you are pumping/have pumped for are still with us.

- ○ I understand and want to answer the rest of the survey
- ○ On second thoughts, I don't want to answer the survey

Employment

About Your Work

Which best describes your employment status?

If you are employed but are currently on maternity leave, please select what you expect your status to be once you return to work in addition to selecting "on maternity leave."

(check all that apply)

- ☐ Full time
- ☐ Full time (self-employed)
- ☐ Part time
- ☐ Part time (self-employed)
- ☐ Student
- ☐ Stay at home parent
- ☐ Unemployed
- ☐ Disabled
- ☐ Retired
- ☐ On maternity leave
- ☐ Other (please explain)
- ☐ I prefer not to answer

What is your current or most recent job title?

If you pump(ed) at work, how many employees work(ed) there?

If you work in more than one establishment, please give the number of employees at the place where you are/were most likely to pump.

- ○ 1-9
- ○ 10-19
- ○ 20-49
- ○ 50-99

- 100-249
- 250-499
- 500-999
- 1000 or more
- I don't remember
- I don't know
- I prefer not to answer

What is your household income?

- Less than $10,000
- $10,000 to $29,999
- $30,000 to $49,999
- $50,000 to $69,999
- $70,000 to $99,999
- $100,000 to $149,999
- $150,000 or more
- I prefer not to answer

Have you ever received assistance from WIC (Women, Infants, and Children)?

- Yes
- No
- I don't remember
- I prefer not to answer

If the assistance you received from WIC included lactation advice, breastfeeding information, guidance about pumping, or provided you with a breast pump, please describe that experience here.

When did you exclusively pump?

For each child you have had (indicated by their birth month and year), please indicate the methods of milk feeding you tried and your level of success.

(check all that apply)

	Exclusive Pumping		Direct nursing at the breast			If you tried nursing, how successful wer			
	Yes	No	I am still trying	I tried	I did not try	Very successful	Somewhat successful	Neutral	Somewha not successfu
» 1st child	○	○	○	○	○	○	○	○	○
» 2nd child	○	○	○	○	○	○	○	○	○
» 3rd child	○	○	○	○	○	○	○	○	○
» 4th child	○	○	○	○	○	○	○	○	○
» 5th child onwards *(please write*									

birth months and years for all the rest of your children in this box)

Are you currently EPing?

- Yes
- No

How many current pumplings?

How many children are you currently EPing for?

Currently pumping: 1 child

You're Currently EPing for 1 Child

These questions refer to the child you are currently EPing for. If you have EPed for another child/other children in the past, please save those answers for the next section.

What is the birth month and year of the child you are EPing for?

(mm/yyyy)

How many weeks pregnant were you when you delivered this child? Answer to the nearest half (0.5) week.

(e.g. 40, 36.5)

How would you describe your labor and delivery with this child?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

Did you have any health problems during your pregnancy with this child?

(check all that apply)

- Anemia
- Depression
- Gestational diabetes
- Macrosomia (baby too big)
- Preeclampsia/high blood pressure
- Hyperemesis gravidarum
- Placenta previa
- Placental abruption
- Low amniotic fluid (oligohydramnios)
- Intrauterine growth restriction (IUGR)
- Preterm labor
- Other (please explain)
- None
- I prefer not to answer

How old was this child when you first started EPing?

- ○ Less than 1 week
- ○ 1 – 2 weeks
- ○ 2 weeks – 1 month
- ○ 1 month – 2 months
- ○ 2 months – 4 months
- ○ 4 months – 6 months
- ○ More than 6 months
- ○ Other (please explain)

- ○ I prefer not to answer

Not including the time when your breast milk was first coming in, how would you describe your milk supply?

(e.g.: "Undersupply months 1-3, oversupply after that"
"Oversupply until I got my period back at 4mpp, then just enough"
"Just enough")

How old, in months, will this child be when you plan to wean from the pump?

- ○ Age in months:
- ○ I don't know yet
- ○ Other (please explain)

- ○ I prefer not to answer

How old, in months, will your child be when they no longer consume your pumped milk?

(e.g., you plan to wean from the pump at 9 months, but you have 3 months supply of frozen milk, so your child will be 12 months old when they no longer consume any of your pumped milk.)

- ○ Age in months:
- ○ I don't know yet
- ○ Other (please explain)

- ○ I prefer not to answer

Think back to just before you gave birth to this child. How long, in months, did you intend to provide breast milk for this child?

- ○ Length of time you intended to give this child breast milk, in months:
- ○ I didn't have an intention/a goal
- ○ I don't know/I don't remember
- ○ Other (please explain)

- ○ I prefer not to answer

Have you ever fed formula to this child?

- ○ Yes

- ○ No
- ○ I prefer not to answer

I am interested in the circumstances around feeding your child formula (e.g., waiting for milk to come in, low supply, extra calories, etc.). If you'd be willing to share them with me, please do so here.

If you have introduced solids (e.g., cereals, purées, table food), how many months old was this child when you first did so?

- ○ Not applicable
- ○ 3 months or less
- ○ 4 months
- ○ 5 months
- ○ 6 months
- ○ 7 months
- ○ 8 – 9 months
- ○ 10 – 12 months
- ○ More than 12 months
- ○ Other (please explain)
- ○ I prefer not to answer

Currently pumping: multiple children

You're Currently EPing for More than 1 Child

These questions refer to the children you are currently EPing for. If you have EPed for another child/other children in the past, please save those answers for the next section.

What are the birth month and years of the children you are EPing for?

(mm/yyyy)

- 1st child
- 2nd child
- 3rd child
- 4th child
- 5th child onwards *(please write the birth months and years of all of the rest of the children you are pumping for in this box)*

How many weeks pregnant were you when you delivered these children? Answer to the nearest half (0.5) week.

(e.g. 40, 36.5)

- 1st child
- 2nd child
- 3rd child
- 4th child
- 5th child onwards *(please write the weeks' gestation of all of the rest of the children you are pumping for in this*

box)

How would you describe your labor and delivery with the **1st** child you are EPing for, born ${q://QID42/ChoiceTextEntryValue/1}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

How would you describe your labor and delivery with the **2nd** child you are EPing for, born ${q://QID42/ChoiceTextEntryValue/2}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

How would you describe your labor and delivery with the **3rd** child you are EPing for, born ${q://QID42/ChoiceTextEntryValue/3}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

How would you describe your labor and delivery with the **4th** child you are EPing for, born ${q://QID42/ChoiceTextEntryValue/4}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

Did you have any health problems during your pregnancy/ies with these children?

(check all that apply)

- ☐ Anemia
- ☐ Depression
- ☐ Gestational diabetes
- ☐ Macrosomia (baby too big)
- ☐ Preeclampsia/high blood pressure
- ☐ Hyperemesis gravidarum
- ☐ Placenta previa
- ☐ Placental abruption
- ☐ Low amniotic fluid (oligohydramnios)
- ☐ Intrauterine growth restriction (IUGR)
- ☐ Preterm labor
- ☐ Other (please explain)

- ☐ None
- ☐ I prefer not to answer

How old were these children when you first started EPing?

(check all that apply)

- ☐ Less than 1 week
- ☐ 1 – 2 weeks
- ☐ 2 weeks – 1 month
- ☐ 1 month – 2 months
- ☐ 2 months – 4 months
- ☐ 4 months – 6 months

- [ ] More than 6 months
- [ ] Other (please explain)
- [ ] I prefer not to answer

Not including the time when your breast milk was first coming in, how would you describe your milk supply?

(e.g.: "Undersupply months 1-3, oversupply after that"
"Oversupply until I got my period back at 4mpp, then just enough"
"Just enough")

How old, in months, will your **youngest** child be when you plan to wean from the pump?

- ○ Age in months:
- ○ I don't know yet
- ○ Other (please explain)
- ○ I prefer not to answer

How old, in months, will your **youngest** child be when they no longer consume your pumped milk?

(e.g., you plan to wean from the pump at 9 months, but you have 3 months supply of frozen milk, so your child will be 12 months old when they no longer consume any of your pumped milk.)

- ○ Age in months:
- ○ I don't know yet
- ○ Other (please explain)
- ○ I prefer not to answer

Think back to just before you gave birth to these children. How long, in months, did you intend to provide breast milk for these children?

- ○ Length of time you intended to give these children breast milk, in months:
- ○ I didn't have an intention/a goal
- ○ I don't know/I don't remember
- ○ Other (please explain)
- ○ I prefer not to answer

Have you ever fed formula to these children?

- ○ Yes
- ○ No
- ○ I prefer not to answer

I am interested in the circumstances around feeding your children formula (e.g., waiting for milk to come in, low supply, extra calories, etc.). If you'd be willing to share them with me, please do so here.

If you have introduced solids (e.g., cereals, purées, table food), how many months old were these children when you first did so?

(check all that apply)

- ☐ Not applicable
- ☐ 3 months or less
- ☐ 4 months
- ☐ 5 months
- ☐ 6 months
- ☐ 7 months
- ☐ 8 – 9 months
- ☐ 10 – 12 months
- ☐ More than 12 months
- ☐ I prefer not to answer

Current pumpers also pumped in past?

Have you also EPed in the past for another child/other children?

- ○ Yes
- ○ No

How many past pumplings?

How many children have you EPed for in the past?

*If you are currently pumping, **do not include** the child/children you are pumping for now*

Past pumper: 1 child

You EPed for 1 Child in the Past

*Please answer the following questions with regards to the **just** the child you EPed for in the past.*

What is the birth month and year of the child you previously EPed for?

(mm/yyyy)

How many weeks pregnant were you when you delivered this child? Answer to the nearest half (0.5) week.

(e.g. 40, 36.5)

How would you describe your labor and delivery with this child?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

Did you have any health problems during your pregnancy with this child?

(check all that apply)

- [ ] Anemia
- [ ] Depression
- [ ] Gestational diabetes
- [ ] Macrosomia (baby too big)
- [ ] Preeclampsia/high blood pressure
- [ ] Hyperemesis gravidarum
- [ ] Placenta previa
- [ ] Placental abruption
- [ ] Low amniotic fluid (oligohydramnios)
- [ ] Intrauterine growth restriction (IUGR)
- [ ] Preterm labor
- [ ] Other (please explain)
- [ ] None
- [ ] I prefer not to answer

How old was this child when you first started EPing?

- ○ Less than 1 week
- ○ 1 – 2 weeks
- ○ 2 weeks – 1 month
- ○ 1 month – 2 months
- ○ 2 months – 4 months
- ○ 4 months – 6 months
- ○ More than 6 months
- ○ Other (please explain)
- ○ I prefer not to answer

Not including the time when your breast milk was first coming in and while you were intentionally weaning off the pump, how would you describe your level of supply?

(e.g.: "Undersupply months 1-3, oversupply after that"
"Oversupply until I got my period back at 4mpp, then just enough"
"Just enough")

How old, in months, was this child when you weaned from the pump?

- ○ Age in months:
- ○ I don't remember
- ○ Other (please explain)
- ○ I prefer not to answer

Why did you wean from the pump?

(check all that apply)

- [ ] I reached the goal I set myself
- [ ] My baby latched/I started to directly nurse
- [ ] Difficult to find the time to pump
- [ ] Difficult to care for a child/children while having to pump
- [ ] Negative feelings about pumping (e.g., hate, resentment, etc.) (please explain)

- [ ] Other people's opinions about exclusively pumping
- [ ] Nipple/breast pain, including clogged ducts and mastitis
- [ ] Inconvenience of managing/storing pumped milk / ran out of space
- [ ] Going back to work/difficulties with pumping at work
- [ ] Low supply
- [ ] My milk was drying up naturally
- [ ] Oversupply
- [ ] I had enough frozen milk to reach the transition to non-infant milk (e.g., cow, soy, etc.)
- [ ] My child was old enough to transition to other non-infant milk (e.g., cow, soy, etc.)
- [ ] Cost of pumping supplies
- [ ] Wanted to try for another baby
- [ ] Pregnant
- [ ] Other (please explain)

- [ ] I prefer not to answer

Where did you find information about how to wean off the pump?

(check all that apply)

- [ ] Books
- [ ] Newspapers
- [ ] Radio
- [ ] Magazines
- [ ] Leaflets/pamphlets
- [ ] Journal articles
- [ ] Television
- [ ] Websites (static). If you remember where, please tell me here:
- [ ] Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- [ ] Doctor
- [ ] Nurse
- [ ] Midwife
- [ ] Lactation consultant
- [ ] Doula
- [ ] Friend/family member
- [ ] Other (please explain)
- [ ] I don't remember
- [ ] I prefer not to answer

How useful were the following sources of information about how to wean off the pump?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful
» Books	○	○	○	○	○
» Newspapers	○	○	○	○	○
» Radio	○	○	○	○	○
» Magazines	○	○	○	○	○
» Leaflets/pamphlets	○	○	○	○	○
» Journal articles	○	○	○	○	○
» Television	○	○	○	○	○
» Websites (static). If you remember where, please tell me here:	○	○	○	○	○

» Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○
» Doctor	○	○	○	○	○
» Nurse	○	○	○	○	○
» Midwife	○	○	○	○	○
» Lactation consultant	○	○	○	○	○
» Doula	○	○	○	○	○
» Friend/family member	○	○	○	○	○
» Other (please explain)	○	○	○	○	○
» I don't remember	○	○	○	○	○
» I prefer not to answer	○	○	○	○	○

How old, in months, will your child be/was this child when they no longer consume(d) your pumped milk?

(e.g., you weaned from the pump at 9 months, but you had 3 months supply of frozen milk, your child would be 12 months old when they no longer consume any of your pumped milk.)

- ○ Age in months:
- ○ I don't know yet
- ○ Other (please explain)
- ○ I prefer not to answer

Think back to just before you gave birth to this child. How long, in months, did you intend to provide breast milk for this child?

- ○ Length of time you intended to give this child breast milk, in months:
- ○ I didn't have an intention/a goal
- ○ I don't know/I don't remember
- ○ Other (please explain)
- ○ I prefer not to answer

Have you ever fed formula to this child?

- ○ Yes
- ○ No
- ○ I prefer not to answer

I am interested in the circumstances around feeding your child formula (e.g., weaned from the pump before transition to other milks, waiting for milk to come in, low supply, extra calories, etc.). If you'd be willing to share them with me, please do so here.

If you have introduced solids (e.g., cereals, purées, table food), how many months old

was this child when you first did so?

- ○ Not applicable
- ○ 3 months or less
- ○ 4 months
- ○ 5 months
- ○ 6 months
- ○ 7 months
- ○ 8 – 9 months
- ○ 10 – 12 months
- ○ More than 12 months
- ○ Other (please explain)

- ○ I prefer not to answer

Past pumper: multiple children

You EPed for More Than 1 Child in the Past

*Please answer the following questions with regards to the **just** the children you EPed for in the past.*

What are the birth month and years of the children you EPed for in the past?

(mm/yyyy)

1st child	
2nd child	
3rd child	
4th child	
5th child onwards *(please write the birth months and years of all of the rest of the children you are pumping for in this box)*	

How many weeks pregnant were you when you delivered these children? Answer to the nearest half (0.5) week.

(e.g. 40, 36.5)

1st child	
2nd child	
3rd child	
4th child	
5th child onwards *(please write the weeks' gestation of all of the rest of the children you previously pumped for in this box)*	

How would you describe your labor and delivery with the **1st** child you EPed for, born ${q://QID185/ChoiceTextEntryValue/1}?

What type of labor did you have?	
What type of delivery did you have?	
Did you use any medication?	

How would you describe your labor and delivery with the **2nd** child you EPed for, born ${q://QID185/ChoiceTextEntryValue/2}?

What type of labor did you have?	
What type of delivery did you have?	
Did you use any medication?	

How would you describe your labor and delivery with the **3rd** child you EPed for, born ${q://QID185/ChoiceTextEntryValue/3}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

How would you describe your labor and delivery with the **4th** child you EPed for, born ${q://QID185/ChoiceTextEntryValue/4}?

What type of labor did you have?

What type of delivery did you have?

Did you use any medication?

Did you have any health problems during your pregnancy/ies with these children?

(check all that apply)

- ☐ Anemia
- ☐ Depression
- ☐ Gestational diabetes
- ☐ Macrosomia (baby too big)
- ☐ Preeclampsia/high blood pressure
- ☐ Hyperemesis gravidarum
- ☐ Placenta previa
- ☐ Placental abruption
- ☐ Low amniotic fluid (oligohydramnios)
- ☐ Intrauterine growth restriction (IUGR)
- ☐ Preterm labor
- ☐ Other (please explain)
- ☐ None
- ☐ I prefer not to answer

How old were these children when you first started EPing?

- ☐ Less than 1 week
- ☐ 1 – 2 weeks
- ☐ 2 weeks – 1 month
- ☐ 1 month – 2 months
- ☐ 2 months – 4 months
- ☐ 4 months – 6 months
- ☐ More than 6 months
- ☐ Other (please explain)
- ☐ I prefer not to answer

Not including the time when your breast milk was first coming in and while you were intentionally weaning off the pump, how would you describe your level of supply?

(e.g.: "Undersupply months 1-3, oversupply after that"
"Oversupply until I got my period back at 4mpp, then just enough"
"Just enough")

How old, in months, were your children when you weaned from the pump?

- [ ] Ages in months:
- [ ] I don't remember
- [ ] Other (please explain)
- [ ] I prefer not to answer

Think back to just before you gave birth to these children. How long, in months, did you intend to provide breast milk for these children?

- ○ Length of time you intended to give these children breast milk, in months:
- ○ I didn't have an intention/a goal
- ○ I don't know/I don't remember
- ○ Other (please explain)
- ○ I prefer not to answer

Why did you wean from the pump?

(check all that apply)

- [ ] I reached the goal I set myself
- [ ] My baby latched/I started to directly nurse
- [ ] Difficult to find the time to pump
- [ ] Difficult to care for a child/children while having to pump
- [ ] Negative feelings about pumping (e.g., hate, resentment, etc.) (please explain)
- [ ] Other people's opinions about exclusively pumping
- [ ] Nipple/breast pain, including clogged ducts and mastitis
- [ ] Inconvenience of managing/storing pumped milk / ran out of space
- [ ] Going back to work/difficulties with pumping at work
- [ ] Low supply
- [ ] My milk was drying up naturally
- [ ] Oversupply
- [ ] I had enough frozen milk to reach the transition to non-infant milk (e.g., cow, soy, etc.)
- [ ] My child was old enough to transition to other non-infant milk (e.g., cow, soy, etc.)
- [ ] Cost of pumping supplies
- [ ] Wanted to try for another baby
- [ ] Pregnant
- [ ] Other (please explain)
- [ ] I prefer not to answer

Where did you find information about how to wean off the pump?

(check all that apply)

- [ ] Books
- [ ] Newspapers
- [ ] Radio
- [ ] Magazines
- [ ] Leaflets/pamphlets
- [ ] Journal articles
- [ ] Television
- [ ] Websites (static). If you remember where, please tell me here:
- [ ] Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:

- [ ] Doctor
- [ ] Nurse
- [ ] Midwife
- [ ] Lactation consultant
- [ ] Doula
- [ ] Friend/family member
- [ ] Other (please explain)

- [ ] I don't remember
- [ ] I prefer not to answer

How useful were the following sources of information about how to wean off the pump?

» Books

» Newspapers

» Radio

» Magazines

» Leaflets/pamphlets

» Journal articles

» Television

» Websites (static). If you remember where, please tell me here:

» Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:

» Doctor

» Nurse

» Midwife

» Lactation consultant

» Doula

» Friend/family member

» Other (please explain)

» I don't remember

» I prefer not to answer

How old, in months, will these children be/were these children when they no longer consume(d) your pumped milk?

(e.g., you weaned from the pump at 9 months, but you had 3 months supply of frozen milk, your child would be 12 months old when they no longer consume any of your pumped milk.)

- ○ Ages in months:
- ○ I don't know yet
- ○ Other (please explain)
- ○ I prefer not to answer

Have you ever fed formula to these children?

- ○ Yes
- ○ No

- ○ I prefer not to answer

I am interested in the circumstances around feeding your children formula (e.g., weaned before transition to other milks, waiting for milk to come in, low supply, extra calories, etc.). If you'd be willing to share them with me, please do so here.

If you have introduced solids (e.g., cereals, purées, table food), how many months old were these children when you first did so?

(check all that apply)

- ☐ Not applicable
- ☐ 3 months or less
- ☐ 4 months
- ☐ 5 months
- ☐ 6 months
- ☐ 7 months
- ☐ 8 – 9 months
- ☐ 10 – 12 months
- ☐ More than 12 months
- ☐ Other (please explain)
- ☐ Prefer not to answer

Why Exclusively Pumping

Reasons for EPing

What are the reasons you exclusively pump(ed) instead of directly nursing? *(check all that apply)*

Latch Problems

- ☐ Couldn't latch: resolvable anatomical reasons in the child (e.g., cleft palate, unresolved tongue/lip tie)
- ☐ Couldn't latch: unresolvable anatomical issues in the child (e.g., high palate)
- ☐ Couldn't latch: minor anatomical issues in the mother (e.g., flat or inverted nipples)
- ☐ Couldn't latch: no obvious anatomical explanation (mother or child)
- ☐ Nursing too painful
- ☐ Child/children started biting me

Situational Reasons

- ☐ Child/children in the NICU
- ☐ Multiple babies; it was just easier
- ☐ Wanted others to be able to feed child/children
- ☐ Went back to work and was pumping anyway
- ☐ Gestational surrogate

Nutritional Reasons

- ☐ Not transferring milk well while nursing
- ☐ Low milk supply
- ☐ Not gaining weight and **needed** to monitor intake

Personal Choice

- ☐ **Wanted** to monitor intake
- ☐ Mentally/emotionally uncomfortable with the idea of nursing
- ☐ Just wanted to
- ☐ Other (please explain)
- ☐ I prefer not to answer

You indicated that your child/children had a resolvable anatomical issue preventing them latching.

What was the issue? (e.g., tongue tie, cleft palate, etc.)

Who diagnosed it?

When was it diagnosed? (child's age in weeks)

Did you get it treated?

When did you get it treated? (child's age in weeks; if ongoing, put "ongoing")

Did the treatment resolve the latch issue?

What are the reasons you exclusively pump(ed) instead of feeding only formula and/or donor milk? *(check all that apply)*

- [ ] Health benefits of breast milk to my child/children
- [ ] Child intolerant of formula
- [ ] Health benefits (to me) of lactating
- [ ] Cost of formula
- [ ] Ingredients of formula
- [ ] Donation of extra milk
- [ ] Other (please explain)
- [ ] I prefer not to answer

I would love to hear why you exclusively pump(ed) in your own words. If you would like to, please tell me your story. You can write as much or as little as you want.

Information about EPing

Information about EPing

When did you first hear the term "exclusive pumping"?

- ○ Before I was pregnant
- ○ While I was pregnant
- ○ After I gave birth
- ○ I don't remember
- ○ I prefer not to answer

Where did you first hear the term "exclusive pumping"?

- ○ Books
- ○ Newspapers
- ○ Radio
- ○ Magazines
- ○ Leaflets/pamphlets
- ○ Journal articles
- ○ Television

- ○ Websites (static). If you remember where, please tell me here:
- ○ Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- ○ Doctor
- ○ Nurse
- ○ Midwife
- ○ Lactation consultant
- ○ Doula
- ○ Friend/family member
- ○ Other (please explain)
- ○ I don't remember
- ○ I prefer not to answer

Did you receive breastfeeding education **before the birth** of your child/children?

- ○ Yes
- ○ No
- ○ I don't remember
- ○ I prefer not to answer

Who provided the breastfeeding education you received **before the birth** of your child/children?

(check all that apply)

- ☐ I did my own research/reading
- ☐ Doctor (one-on-one)
- ☐ Nurse (one-on-one)
- ☐ Midwife (one-on-one)
- ☐ Lactation consultant (one-on-one)
- ☐ Doula (one-on-one)
- ☐ Friend or family member
- ☐ Childbirth/parenting class that included breastfeeding information. The class was run by:
- ☐ Class specifically about breastfeeding. The class was run by:
- ☐ Other (please explain)

You indicated that you did your own research/reading about breastfeeding **before the birth** of your child/children. What sources of information did you use?

(check all that apply)

- ☐ Books
- ☐ Newspapers
- ☐ Radio
- ☐ Magazines
- ☐ Leaflets/pamphlets
- ☐ Journal articles
- ☐ Television
- ☐ Websites (static). If you remember where, please tell me here:
- ☐ Online forum (e.g., Facebook group, chat room). If you remember where, please tell me here:
- ☐ Doctor
- ☐ Nurse
- ☐ Midwife

- [ ] Lactation consultant
- [ ] Doula
- [ ] Friend/family member
- [ ] Other (please explain)

- [ ] I don't remember
- [ ] I prefer not to answer

You indicated that you received breastfeeding education from the following sources **before the birth** of your child/children. Please indicate which sources mentioned and/or explained EPing and rate the usefulness of the information from each source.

	Exclusive pumping was...		If exclusive pumping was mentioned or exp was the information?			
	Mentioned	Explained	Very useful	Somewhat useful	Neutral	Somewhat not useful
» I did my own research/reading	☐	☐	○	○	○	○
» Doctor (one-on-one)	☐	☐	○	○	○	○
» Nurse (one-on-one)	☐	☐	○	○	○	○
» Midwife (one-on-one)	☐	☐	○	○	○	○
» Lactation consultant (one-on-one)	☐	☐	○	○	○	○
» Doula (one-on-one)	☐	☐	○	○	○	○
» Friend or family member	☐	☐	○	○	○	○
» Childbirth/parenting class that included breastfeeding information. The class was run by:	☐	☐	○	○	○	○
» Class specifically about breastfeeding. The class was run by:	☐	☐	○	○	○	○
» Other (please explain)	☐	☐	○	○	○	○

Did you receive any breastfeeding education **after the birth** of your child/children?

- ○ Yes
- ○ No
- ○ I don't remember
- ○ I prefer not to answer

Who provided the breastfeeding education you received **after the birth** of your child/children?

(check all that apply)

- [ ] I did my own research/reading
- [ ] Doctor (one-on-one)
- [ ] Nurse (one-on-one)
- [ ] Midwife (one-on-one)
- [ ] Lactation consultant (one-on-one)
- [ ] Doula (one-on-one)
- [ ] Friend or family member
- [ ] Childbirth/parenting class that included breastfeeding information. The class was run by:
- [ ] Class specifically about breastfeeding. The class was run by:
- [ ] Other (please explain)

You indicated that you did your own research/reading about breastfeeding **after the birth** of your child/children. What sources of information did you use?

(check all that apply)

- ☐ Books
- ☐ Newspapers
- ☐ Radio
- ☐ Magazines
- ☐ Leaflets/pamphlets
- ☐ Journal articles
- ☐ Television
- ☐ Websites (static). If you remember where, please tell me here:
- ☐ Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- ☐ Doctor
- ☐ Nurse
- ☐ Midwife
- ☐ Lactation consultant
- ☐ Doula
- ☐ Friend/family member
- ☐ Other (please explain)
- ☐ I don't remember
- ☐ I prefer not to answer

You indicated that you received breastfeeding education from the following sources **after the birth** of your child/children. Please indicate which sources mentioned and/or explained EPing and rate the usefulness of the information from each source.

	Exclusive pumping was...		If exclusive pumping was mentioned or explained, how useful was the information?			
	Mentioned	Explained	Very useful	Somewhat useful	Neutral	Somewhat not useful
» I did my own research/reading	☐	☐	○	○	○	○
» Doctor (one-on-one)	☐	☐	○	○	○	○
» Nurse (one-on-one)	☐	☐	○	○	○	○
» Midwife (one-on-one)	☐	☐	○	○	○	○
» Lactation consultant (one-on-one)	☐	☐	○	○	○	○
» Doula (one-on-one)	☐	☐	○	○	○	○
» Friend or family member	☐	☐	○	○	○	○
» Childbirth/parenting class that included breastfeeding information. The class was run by:	☐	☐	○	○	○	○
» Class specifically about breastfeeding. The class was run by:	☐	☐	○	○	○	○
» Other (please explain)	☐	☐	○	○	○	○

When you first started to EP, how **knowledgeable** did you feel about the following? Please slide the indicator along the bars.

(0 = no knowledge at all; 100 = expert)

	0	10	20	30	40	50	60	70	80	90	100
Nursing at the breast (direct nursing)											
Issues that could occur with direct nursing											
How to establish a latch											
How to pump **as a supplement to** direct nursing											
How to **exclusively** pump											
Other (please explain)											

When you decided to EP/found yourself EPing, how important was information about the following topics?

	Very important	Somewhat important	Neutral	Somewhat not important	Not at all important
Breast pump operation/settings	○	○	○	○	○
Flange sizing	○	○	○	○	○
How to avoid discomfort/increase comfort	○	○	○	○	○
How often to pump	○	○	○	○	○
How long each pumping session should be	○	○	○	○	○
How much milk to pump	○	○	○	○	○
How to store/heat up milk	○	○	○	○	○
How to increase supply	○	○	○	○	○
How to maintain supply	○	○	○	○	○
How to decrease supply	○	○	○	○	○
How to wean	○	○	○	○	○
How much to feed	○	○	○	○	○
How often to feed	○	○	○	○	○
How to supplement with formula	○	○	○	○	○
Choice of feeding bottles/nipples	○	○	○	○	○
How to pump while out of the house	○	○	○	○	○
How to look after child/children while pumping	○	○	○	○	○
How to get back to the breast	○	○	○	○	○
How to explain EPing to others	○	○	○	○	○
Other (please explain)	○	○	○	○	○

How useful were the following sources of information when finding out information about exclusively pumping?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful	Not applicable/I never used this source
Books	○	○	○	○	○	○
Newspapers	○	○	○	○	○	○
Radio	○	○	○	○	○	○
Magazines	○	○	○	○	○	○
Leaflets/pamphlets	○	○	○	○	○	○
Journal articles	○	○	○	○	○	○
Television	○	○	○	○	○	○
Websites (static). If you remember where, please tell me here:	○	○	○	○	○	○
Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○	○
Doctor	○	○	○	○	○	○
Nurse	○	○	○	○	○	○
Midwife	○	○	○	○	○	○
Lactation consultant	○	○	○	○	○	○
Doula	○	○	○	○	○	○
Friend/family member	○	○	○	○	○	○
Other (please explain)	○	○	○	○	○	○

In your own words, please share how you have learned about EPing. Where do or did you go to ask questions? Did you get helpful answers? How do you feel about using those sources of information?

Do you still have any unanswered questions about EPing?

- ○ Yes
- ○ I don't know/I'm not sure
- ○ No
- ○ I prefer not to answer

What unanswered questions do you still have about EPing? Where have you looked for answers?

Experiences of EPing

Your Experiences of Exclusively Pumping

What are/were the biggest challenges that you encounter(ed) while exclusively pumping?

(check all that apply)

- ☐ Finding the time to pump
- ☐ Taking care of a child/children while having to pump
- ☐ Other people's opinions about exclusively pumping
- ☐ Nipple/breast pain, including clogged ducts and mastitis
- ☐ Managing/storing pumped milk
- ☐ Low supply
- ☐ Oversupply
- ☐ Weaning
- ☐ Cost of pumping supplies
- ☐ General anxiety about pumping (e.g., supply, finding places to pump, going back to work)
- ☐ Other (please explain)
- ☐ I prefer not to answer

Which of the following have you experienced while EPing?

(check all that apply)

- ☐ Clogged Ducts
- ☐ Milk bleb/blister
- ☐ Mastitis
- ☐ Thrush
- ☐ Galactoceles
- ☐ Cracked/bleeding nipples
- ☐ Nipple vasospasm/Reynaud's
- ☐ General nipple pain or chafing
- ☐ Other (please explain)
- ☐ No issues
- ☐ I prefer not to answer

How did you resolve the breast health issues you experienced?

(check all that apply)

	It went away on its own with no treatment	I treated it at home	I spoke to/saw a medical professional for advice/treatment	I still experience this
» Clogged Ducts	☐	☐	☐	☐
» Milk bleb/blister	☐	☐	☐	☐
» Mastitis	☐	☐	☐	☐
» Thrush	☐	☐	☐	☐
» Galactoceles	☐	☐	☐	☐
» Cracked/bleeding nipples	☐	☐	☐	☐
» Nipple vasospasm/Reynaud's	☐	☐	☐	☐
» General nipple pain or chafing	☐	☐	☐	☐
» Other (please explain)	☐	☐	☐	☐

» No issues	☐	☐	☐	☐
» I prefer not to answer	☐	☐	☐	☐

You indicated that you treated one or more of your breast health issues at home. Where did you find the information about how to treat the issue?

(check all that apply)

- ☐ Books
- ☐ Newspapers
- ☐ Radio
- ☐ Magazines
- ☐ Leaflets/pamphlets
- ☐ Journal articles
- ☐ Television
- ☐ Websites (static). If you remember where, please tell me here:
- ☐ Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- ☐ Doctor
- ☐ Nurse
- ☐ Midwife
- ☐ Lactation consultant
- ☐ Doula
- ☐ Friend/family member
- ☐ Other (please explain)
- ☐ I don't remember
- ☐ I prefer not to answer

How useful were the following sources of information about treating your breast health issue(s) at home?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful
» Books	○	○	○	○	○
» Newspapers	○	○	○	○	○
» Radio	○	○	○	○	○
» Magazines	○	○	○	○	○
» Leaflets/pamphlets	○	○	○	○	○
» Journal articles	○	○	○	○	○
» Television	○	○	○	○	○
» Websites (static). If you remember where, please tell me here:	○	○	○	○	○
» Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○
» Doctor	○	○	○	○	○
» Nurse	○	○	○	○	○
» Midwife	○	○	○	○	○
» Lactation consultant	○	○	○	○	○
» Doula	○	○	○	○	○
» Friend/family member	○	○	○	○	○

» Other (please explain)	○	○	○	○	○
» I don't remember	○	○	○	○	○
» I prefer not to answer	○	○	○	○	○

How useful were the following sources of information when finding out information about exclusively pumping?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful	Not applicable/I never used this source
Books	○	○	○	○	○	○
Newspapers	○	○	○	○	○	○
Radio	○	○	○	○	○	○
Magazines	○	○	○	○	○	○
Leaflets/pamphlets	○	○	○	○	○	○
Journal articles	○	○	○	○	○	○
Television	○	○	○	○	○	○
Websites (static). If you remember where, please tell me here:	○	○	○	○	○	○
Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○	○
Doctor	○	○	○	○	○	○
Nurse	○	○	○	○	○	○
Midwife	○	○	○	○	○	○
Lactation consultant	○	○	○	○	○	○
Doula	○	○	○	○	○	○
Friend/family member	○	○	○	○	○	○
Other (please explain)	○	○	○	○	○	○

How much do or did family and friends support your exclusive pumping (e.g., emotional/mental support, encouragement, helping with your child/children while you pump)?

(0 is no support at all and 100 is the most supportive you could possibly imagine)

	0 10 20 30 40 50 60 70 80 90 100	#EditSection, NotApplicable#
My partner		☐
My mother		☐
My father		☐
My other children		☐
My extended family		☐
My work colleagues		☐
My doctor(s)		☐
My child's pediatrician		☐
Other (please explain)		☐

What reactions have you experienced when you have told others that you are/were exclusively pumping? What are some of the things others have said to you?

Have you ever tried anything to increase or support your milk supply (whether successful or not)?

- ○ Yes
- ○ I think so
- ○ No
- ○ I don't know
- ○ I prefer not to answer

What have you tried to increase or support your milk supply?

(check all that apply)

Supplements

- ☐ Fenugreek
- ☐ Blessed thistle
- ☐ Milk thistle/silymarin
- ☐ Malunggay
- ☐ Vitamin/herbal mixes
- ☐ Lecithin (soy or sunflower)

Food/drink

- ☐ Oats
- ☐ Flax
- ☐ Brewer's yeast
- ☐ Drinking more water
- ☐ Beer/stout
- ☐ Sports drinks (e.g. Gatorade)
- ☐ Coconut water
- ☐ Teas intended to increase milk supply

Medication

- ☐ Domperidone
- ☐ Reglan

- ☐ Power pumping
- ☐ Changed breast pump
- ☐ Other (please specify)
- ☐ Other (please specify)

How successful were the thing(s) you tried to increase or support your milk supply?

	This definitely helped	This somewhat helped	It made no difference	This made it somewhat worse	This made it much worse	I don't know
» Fenugreek	○	○	○	○	○	○
» Blessed thistle	○	○	○	○	○	○
» Milk thistle/silymarin	○	○	○	○	○	○

» Malunggay	○	○	○	○	○	○
» Vitamin/herbal mixes	○	○	○	○	○	○
» Lecithin (soy or sunflower)	○	○	○	○	○	○
» Oats	○	○	○	○	○	○
» Flax	○	○	○	○	○	○
» Brewer's yeast	○	○	○	○	○	○
» Drinking more water	○	○	○	○	○	○
» Beer/stout	○	○	○	○	○	○
» Sports drinks (e.g. Gatorade)	○	○	○	○	○	○
» Coconut water	○	○	○	○	○	○
» Teas intended to increase milk supply	○	○	○	○	○	○
» Domperidone	○	○	○	○	○	○
» Reglan	○	○	○	○	○	○
» Power pumping	○	○	○	○	○	○
» Changed breast pump	○	○	○	○	○	○
» Other (please specify)	○	○	○	○	○	○
» Other (please specify)	○	○	○	○	○	○

Where did you find out about the thing(s) you use(d) to increase/support your milk supply?

(check all that apply)

- ☐ Books
- ☐ Newspapers
- ☐ Radio
- ☐ Magazines
- ☐ Leaflets/pamphlets
- ☐ Journal articles
- ☐ Television
- ☐ Websites (static). If you remember where, please tell me here:

- ☐ Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:

- ☐ Doctor
- ☐ Nurse
- ☐ Midwife
- ☐ Lactation consultant
- ☐ Doula
- ☐ Friend/family member
- ☐ Other (please explain)

- ☐ I don't remember
- ☐ I prefer not to answer

How useful were the following sources of information about the thing(s) you use(d) to increase/support your milk supply?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful
» Books	○	○	○	○	○

» Newspapers	○	○	○	○	○
» Radio	○	○	○	○	○
» Magazines	○	○	○	○	○
» Leaflets/pamphlets	○	○	○	○	○
» Journal articles	○	○	○	○	○
» Television	○	○	○	○	○
» Websites (static). If you remember where, please tell me here:	○	○	○	○	○
» Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○
» Doctor	○	○	○	○	○
» Nurse	○	○	○	○	○
» Midwife	○	○	○	○	○
» Lactation consultant	○	○	○	○	○
» Doula	○	○	○	○	○
» Friend/family member	○	○	○	○	○
» Other (please explain)	○	○	○	○	○
» I don't remember	○	○	○	○	○
» I prefer not to answer	○	○	○	○	○

Have you ever **donated** your breast milk?

(check all that apply)

- ☐ Yes: to an official milk bank
- ☐ Yes: to another parent/child I know personally
- ☐ Yes: to another parent/child I didn't know before (e.g., Human Milk for Human Babies, Eats4Feets)
- ☐ Yes: other recipient
- ☐ No
- ☐ I prefer not to answer

Have you ever **sold** your breast milk?

(check all that apply)

- ☐ Yes: to an official milk bank
- ☐ Yes: to another parent/child I know personally
- ☐ Yes: to another parent/child I didn't know before
- ☐ Yes: other recipient
- ☐ No
- ☐ I prefer not to answer

Have you ever **received** another's breast milk?

(check all that apply)

- ☐ Yes: from an official milk bank
- ☐ Yes: from another mother I know personally
- ☐ Yes: from another mother I didn't know before (e.g., Human Milk for Human Babies, Eats4Feets)
- ☐ Yes: other donor (please explain)

- [ ] No
- [ ] I prefer not to answer

Feelings about EPing

Your Feelings About Exclusively Pumping

Below is a list of feelings and emotions. Select all those that you have ever felt about EPing.

pissed off	focused	insecure	challenged
depressed	strong	hopeful	regretful
lazy	scared	inadequate	apathetic
apologetic	worthless	lonely	hurt
capable	cheated	humble	disappointed
intimate	bitter	rejected	grieving
productive	sad	devoted	belittled
ashamed	defiant	confused	caring
resentful	loving	burdened	vulnerable
abandoned	frustrated	miserable	uncertain
powerless	angry	guilty	anxious
grateful	happy	envious	adequate
embarrassed	controlled	uncaring	detached
restricted	unmotivated	indecisive	discouraged

In your own words, please explain your feelings about your EPing experience. How did you feel when you first started? How do you feel now? If you have weaned from the pump, how did you feel during the period of time you EPed?

What would have made your experience of EPing **better?**

What would have made your experience of EPing **worse?**

Do you want to answer questions about pump?

Do you want to answer some questions about your breast pump?

I am interested in your experience of your breast pump — for example, how you chose it, how much you paid for it, whether you've bought any accessories — but I realize you've already given me a lot of your time, so I'm giving you the option!

- ○ Yes
- ○ No

Breast pump

About Your Breast Pump

What breast pump(s) do you own or use (or have ever owned or used)?

- Your **primary pump** is the one that you use the majority of the time.
- Your **secondary and/or backup pump** is that which you take to work or keep for emergencies, for example.
- If you use **two or more pumps equally**, it does not matter which you put first.
- If you use **five or more pumps**, please enter the four you use the most.

Enter the make and model, e.g., Medela PISA, Spectra S1

Primary pump	
Secondary/Backup pump	
Additional pump	
Additional pump	

How did you acquire your breast pump(s)? *(check all that apply)*

	» Primary pump	» Secondary/Backup pump	» Additional pump	» Additional pump
Purchased from store	☐	☐	☐	☐
Received through insurance	☐	☐	☐	☐
Rent	☐	☐	☐	☐
Borrow/received free of charge from organization	☐	☐	☐	☐
Borrow/received from friend/family	☐	☐	☐	☐
Other (please explain)	☐	☐	☐	☐
I don't remember	☐	☐	☐	☐
I prefer not to answer	☐	☐	☐	☐

If you bought, rent(ed), or had to pay extra for your primary pump, ${q://QID22/ChoiceTextEntryValue/1}, how much did you spend?

*(If you are currently **renting** your ${q://QID22/ChoiceTextEntryValue/1}, please enter the amount you pay monthly)*

Amount you spent

Currency (e.g., US Dollars, Euros)

Rented? (Yes/No)

Which breast pump(s) did you have a choice about owning and/or using?

(check all that apply)

- [ ] » Primary pump
- [ ] » Secondary/Backup pump
- [ ] » Additional pump
- [ ] » Additional pump

How much did each of these influence your decision to go with your primary pump, ${q://QID22/ChoiceTextEntryValue/1}? *(check all that apply)*

	A great deal	Somewhat	Neutral	Somewhat not	Not at all
Size of the pump	○	○	○	○	○
Features of the pump (e.g., battery, how loud it is)	○	○	○	○	○
Customizability of the settings (e.g., speed, vacuum)	○	○	○	○	○
Availability of additional parts (e.g., flanges, bottles)	○	○	○	○	○
Comfort of pumping	○	○	○	○	○
Price	○	○	○	○	○
Online reviews	○	○	○	○	○
Recommendations by friends/family	○	○	○	○	○
Recommendation by medical professional	○	○	○	○	○
Reputation of the manufacturer	○	○	○	○	○
Other (please explain)	○	○	○	○	○

Where have you found out information about your primary pump, ${q://QID22/ChoiceTextEntryValue/1}, whether prior to acquiring or once using it?

(check all that apply)

- [ ] Pump manual/website
- [ ] Books
- [ ] Newspapers
- [ ] Radio
- [ ] Magazines
- [ ] Leaflets/pamphlets
- [ ] Journal articles
- [ ] Television
- [ ] Websites (static). If you remember where, please tell me here:
- [ ] Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- [ ] Doctor
- [ ] Nurse
- [ ] Midwife
- [ ] Lactation consultant
- [ ] Doula

- [ ] Friend/family member
- [ ] Other (please explain)

- [ ] I don't remember
- [ ] I prefer not to answer

How useful were the following sources of information about your primary pump?

	Very useful	Somewhat useful	Neutral	Somewhat not useful	Not at all useful
» Pump manual/website	○	○	○	○	○
» Books	○	○	○	○	○
» Newspapers	○	○	○	○	○
» Radio	○	○	○	○	○
» Magazines	○	○	○	○	○
» Leaflets/pamphlets	○	○	○	○	○
» Journal articles	○	○	○	○	○
» Television	○	○	○	○	○
» Websites (static). If you remember where, please tell me here:	○	○	○	○	○
» Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:	○	○	○	○	○
» Doctor	○	○	○	○	○
» Nurse	○	○	○	○	○
» Midwife	○	○	○	○	○
» Lactation consultant	○	○	○	○	○
» Doula	○	○	○	○	○
» Friend/family member	○	○	○	○	○
» Other (please explain)	○	○	○	○	○
» I don't remember	○	○	○	○	○
» I prefer not to answer	○	○	○	○	○

Have you ever bought additional parts/accessories to use with your pump?

- ○ Yes
- ○ No
- ○ I don't remember
- ○ I prefer not to answer

What additional parts/accessories have you bought?

(check all that apply. There's more than one "other" so you can put one thing in each box)

- [ ] Flanges
- [ ] Collection bottles
- [ ] Bottle adaptors
- [ ] Freemies
- [ ] Valves/membranes
- [ ] Tubing
- [ ] Battery

- [ ] Bag/Tote
- [ ] Milk storage bags
- [ ] Handsfree bra
- [ ] Smartphone app
- [ ] Other (please explain)

- [ ] Other (please explain)

How much money do you estimate you have spent on pumping supplies (not including any breast pumps)?

Amount of money
Currency (e.g., US Dollars, Euros)

Other health

Your Health

Have you ever had any chronic female-specific health conditions?

(e.g., PCOS, insufficient mammary tissue, endometriosis)

- ○ Yes
- ○ I'm not sure
- ○ No
- ○ I'd prefer not to answer

What chronic female-specific health conditions have you had?

Have you ever had any other chronic health conditions?

(e.g., high blood pressure, diabetes, arthritis)

- ○ Yes
- ○ I'm not sure
- ○ No
- ○ I prefer not to answer

What other chronic health conditions have you had?

Do you or have you ever had feelings of depression, anxiety, homesickness, agitation, or anger immediately before your milk let(s) down?

- ○ Yes
- ○ No
- ○ I don't know / I'm not sure
- ○ I prefer not to answer

Have you ever heard of Dysphoric Milk Ejection Reflex (D-MER)?

- ○ Yes
- ○ No
- ○ I don't know / I'm not sure
- ○ I prefer not to answer

Have you ever been diagnosed with D-MER?

- ○ Yes: a medical professional diagnosed me

- ○ Yes: I diagnosed myself
- ○ No
- ○ I don't know / I'm not sure
- ○ I prefer not to answer

Where have you found information about your negative feelings associated with your milk let down/D-MER?

(check all that apply)

- ☐ Books
- ☐ Newspapers
- ☐ Radio
- ☐ Magazines
- ☐ Leaflets/pamphlets
- ☐ Journal articles
- ☐ Television
- ☐ Websites (static). If you remember where, please tell me here:
- ☐ Online forums (e.g., Facebook group, chat room). If you remember where, please tell me here:
- ☐ Doctor
- ☐ Nurse
- ☐ Midwife
- ☐ Lactation consultant
- ☐ Doula
- ☐ Friend/family member
- ☐ Other (please explain)
- ☐ I don't remember
- ☐ I prefer not to answer

Please tell me how you manage your negative feelings associated with let down/D-MER.

If you are seeking more information about feelings of depression, anxiety, homesickness, agitation, or anger during milk let down or about D-MER, a great place to start is www.d-mer.org.

Did or do you suffer from postpartum depression (PPD) and/or postpartum anxiety (PPA)?

- ○ Yes, currently
- ○ Yes, previously
- ○ I'm not sure
- ○ No
- ○ I prefer not to answer

How many months postpartum did your PPD and/or PPA symptoms start?

- ○ Less than 1 month
- ○ 1 – 2 months

- ○ 3 – 4 months
- ○ 5 – 6 months
- ○ 6 – 9 months
- ○ 9 – 12 months
- ○ More than 12 months
- ○ I don't remember / I don't know
- ○ I prefer not to answer

How many months postpartum did your PPD and/or PPA symptoms **start** to get better?

- ○ Less than 1 month
- ○ 1 – 2 months
- ○ 3 – 4 months
- ○ 5 – 6 months
- ○ 6 – 9 months
- ○ 9 – 12 months
- ○ More than 12 months
- ○ They have not improved
- ○ I don't remember / I don't know
- ○ I prefer not to answer

Have your PPD and/or PPA symptoms **completely gone away**?

- ○ Yes
- ○ No
- ○ I don't know
- ○ I prefer not to answer

Did you see a medical professional about your PPD and/or PPA?

- ○ Yes
- ○ No
- ○ I prefer not to answer

Did you take any medication for your PPD and/or PPA?

- ○ Yes
- ○ No
- ○ I prefer not to answer

Other than medication, what ways did you treat your PPD/and or PPA, if any?

(check all that apply)

- ☐ Therapy (one-on-one)
- ☐ Support groups (in person or online)
- ☐ Meditation
- ☐ Exercise
- ☐ More/better sleep
- ☐ Healthy/healthier eating
- ☐ Got out of the house more
- ☐ Did more social activities
- ☐ Gave up/reduced pumping
- ☐ Other (please explain) _____
- ☐ None
- ☐ I don't remember
- ☐ I prefer not to answer

To what extent do you feel that EPing contributed to your PPD and/or PPA?

(0 = not at all, 100 = I believe it was the only reason I got PPD/PPA)

0 10 20 30 40 50 60 70 80 90 100

How much did EPing contribute to your PPD/PPA?

If you're willing, please share more details about your experience of PPD and/or PPA here.

If you would like more help and resources about PPD and PPA, a great place to start is www.postpartum.net.

Final questions

Last But Not Least...

Knowing what you know now and if you were given a chance to start over, would you exclusively pump for the child/children you're **currently** pumping for?

- Yes, definitely
- Yes, probably
- Neutral
- No, probably not
- No, definitely not
- It would depend on the situation (please explain)
- Other (please explain)
- I don't know
- I prefer not to answer

If you were to have another child, would you **attempt to directly nurse** that child?

- Yes, definitely
- Yes, probably
- Neutral
- No, probably not
- No, definitely not
- It would depend on the situation (please explain)
- Other (please explain)
- I am **definitely** not having another child
- I don't know
- I prefer not to answer

If you were to have another child and you and/or that child **could not nurse**, would you exclusively pump for that child?

- Yes, definitely
- Yes, probably
- Neutral
- No, probably not

- No, definitely not
- It would depend on the situation (please explain)
- Other (please explain)
- I am **definitely** not having another child
- I don't know
- I prefer not to answer

If you were to have another child and **you did not want to nurse**, would you exclusively pump for that child?

- Yes, definitely
- Yes, probably
- Neutral
- No, probably not
- No, definitely not
- It would depend on the situation (please explain)
- Other (please explain)
- I am **definitely** not having another child
- I don't know
- I prefer not to answer

Future Participation

Thank you so much for your participation in this survey!

If there is anything else you would like to share about exclusive pumping or would like me to know, please type in the box below.

You indicated earlier that you are currently pumping breast milk. I would like to find out more about exclusive pumpers through your pumping journey. Would you be willing to participate in short follow up surveys every two months until you wean from the pump?

Your responses will still be anonymized, but will be linked from survey to survey so I can follow your unique experiences.

- Yes — sign me up!
- Maybe — email me the first survey and I'll decide then!
- No thanks!

Awesome! Thank you! Please provide me your email address so I can send you a link to the follow up surveys.

You indicated earlier that you are currently pregnant. If you **might** EP for your next child, I would like to find out more about your pumping journey. Would you be willing to participate in short follow up surveys every two months as long as you are EPing?

Your responses will still be anonymized, but will be linked from survey to survey so I

can follow your unique experiences.

- ○ Yes — sign me up!
- ○ Maybe — email me the first survey and I'll decide then!
- ○ No thanks!

Awesome! Thank you! Please provide me your email address so I can send you a link to the follow up surveys.

In the future, I may wish to follow-up with you. Would you be willing to be contacted?

Your information will still be anonymized, but I will know your responses to the survey during the follow-up.

- ○ Yes — sign me up!
- ○ Maybe — email me and I'll decide then!
- ○ No thanks!

Awesome! Thank you! Please provide me your email address.

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